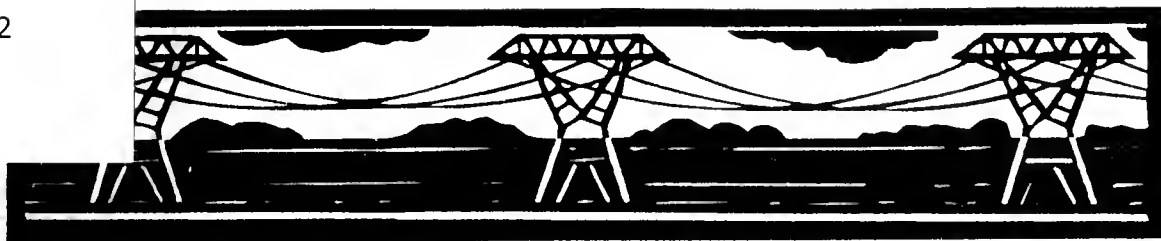


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16TH ANNUAL REPORT
of the
Pacific Northwest Electric Power
and
Conservation Planning Council

Submitted to the

Committee on Energy and Natural Resources
United States Senate

Committee on Commerce
United States House of Representatives

and

Committee on Resources
United States House of Representatives

October 1, 1995, through September 30, 1996

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The Northwest Power Planning Council was established pursuant to an act of the Congress of the United States, and by the states of Idaho, Montana, Oregon and Washington. The Act charged the Council with convening a public forum through which the electricity needed by the Northwest could be secured economically, and the Columbia River Basin's fish and wildlife could be protected.

Specifically, Congress, in the Northwest Power Act of 1980 (Public Law 96-501), called on the Council to:

- Develop a 20-year electrical power plan to guarantee adequate and reliable energy at the lowest cost to the Pacific Northwest.*
- Produce a program to protect and rebuild fish and wildlife populations in the Columbia River Basin that have been affected by hydroelectric development.*
- Conduct an extensive program to involve the public in deliberations over power planning and fish and wildlife protection.*

This annual report has been developed pursuant to Section 4(h)(12)(A) of the Northwest Power Act.

The Council's bylaws, which include its organizational structure, practices and procedures, are available to the public. Please order publication 96-13.

OVERVIEW OF FISCAL YEAR 1996 ACTIVITIES

Fiscal Year 1996, which began October 1, 1995, and ended on September 31, 1996, has been a very busy year for the Northwest Power Planning Council. The keyword appears to be "transitions," on both the power side and in fish and wildlife recovery efforts.

Transitions in the electricity industry nationwide are having major consequences for Northwest utilities, particularly the Bonneville Power Administration. The industry is being restructured. Competition among power suppliers is increasing. Transmission systems are being opened to all wholesale buyers and sellers. And utility efforts to keep short-term electricity rates as low as possible are requiring the region to rethink how it will accomplish the long-term conservation and renewable resource goals in the Northwest Power Act.

These issues were reviewed and analyzed in the Council's Draft Fourth Northwest Power Plan, which was released for public comment on March 13, 1996.

The industry's transition also prompted the governors of Idaho, Montana, Oregon and Washington to convene the "Comprehensive Review of the Northwest Energy System," with the goal of securing the benefits of competition in the region's electricity industry without jeopardizing the region's economy or its environment. This summer, the Review's Steering Committee called on Power Planning Council staff to help draft proposed recommendations for the new electricity system for the region. Council staff are also working closely with the governors' representatives to inform and involve the citizens of all four states in the review process. The Comprehensive Review is expected to be completed in December 1996, at which time the Steering Committee will deliver its recommendations to the governors and the region's Indian tribes. A draft of the Committee's recommendations is currently being reviewed by the public. Ten hearings throughout the region have been scheduled through mid-November.

The Council plans to take comment on the Draft Fourth Northwest Power Plan until March 14, 1997, so recommendations from the Comprehensive Review can be incorporated into the final plan, along with other public comment.

"Transitions" is also the key word regarding Columbia River Basin fish and wildlife. In September 1995, the Council voted to amend the wildlife and resident fish sections of the Columbia River Basin Fish and Wildlife Program, incorporating new measures that had been under consideration and review since January 1995. The new measures are spread across all four Northwest states and include both research and on-the-ground projects.

In October 1995, the Clinton administration and the Congress negotiated a stable budget for the Bonneville Power Administration's fish and wildlife recovery efforts through 2001. Over the next year, the federal agencies, in consultation with the Council and the region's Indian tribes, negotiated a memorandum of agreement to implement the budget commitment, which was completed in September 1996. The purposes of the agreement are to provide greater financial certainty to Bonneville, to identify a budget that will meet Bonneville's fish and wildlife funding obligations (barring unforeseen events), and to ensure greater efficiency and accountability in the expenditure of these funds.

For similar reasons, and at the Council's urging, the Columbia Basin Fish and Wildlife Authority has proposed funding priorities for fish and wildlife restoration measures. Those priorities were reviewed by the public, and the majority were adopted by the Council on August 7, 1996. Twelve will require additional review before Council approval for funding. The Council rejected two because they are inconsistent with the fish and wildlife program.

In November, Congress called on the Council to review and report within 180 days on "the most appropriate governance structure to allow more effective regional control" over fish and wildlife restoration. The Council held a workshop in February to explore the topic, released a proposal for public review in April and forwarded its final recommendation to Congress in May. The Council asked for an executive order that would require federal agencies operating the Columbia River hydroelectric dams to spell out in writing any

legal or other reasons that prevent the agencies from acting in a manner consistent with the Council's fish and wildlife program.

The Council has long sought more information on what elements most influence salmon survival in the Columbia Basin. In September, the Independent Scientific Group, which was established to carry out such research, presented its findings to the Council. The scientists' report, "Return to the River: Restoration of Salmonid Fishes in the Columbia River Ecosystem," looks at conditions that were most conducive to salmon health before the river was developed and suggests ways to focus recovery efforts around that earlier ecosystem model. The report includes an overall conceptual foundation for salmon restoration in the Columbia River Basin and the Group's first biennial review of the science underlying the Columbia River Basin Fish and Wildlife Program.

In August, the Council voted to consider amending the fish and wildlife program to incorporate new information such as that contained in the scientists' report, as well as in the five-year work plans being developed to guide key areas of program implementation. The Council plans to take recommendations for amendments between February 1997 and May 1997. The Northwest Power Act requires that the Council take action on the proposals within one year of the close of recommendations, in this case, by May 1998.

Chinook runs in general in the Columbia River Basin are much improved over those in 1995, and early jack counts indicate that chinook runs may be higher again next year, too. At the same time, however, steelhead runs in the basin are down. The National Marine Fisheries Service is considering several West Coast steelhead runs, including those in the Columbia and Snake river basins, for listing as threatened or endangered species. The Fisheries Service is expected to make its decision on the steelhead next year. Resident fish populations also are in trouble. In addition to the Endangered Species Act listing of Kootenai River sturgeon, the U.S. Fish and Wildlife Service has determined that bull trout are warranted, but precluded, as a species qualifying for listing.

On August 30, 1996, the U.S. General Accounting Office completed its review of the Council's business practices. The Council had welcomed the review and participated fully in it, viewing it as part of the independent oversight that is always a healthy element of government. The report noted that, over time, the Council's attention to business operations had declined as important fish, wildlife and energy matters absorbed more of the Council's focus. Nonetheless, the report found that the Council's business practices are generally sound, that internal management controls are effective, and that the Council is a credible regional planning agency. The incident that drew the audit was a severance agreement between the Council's former executive director and a former Council chairman. While the agreement did not violate any Council bylaws, the Council members objected to it once they were made aware of its contents. A more suitable agreement was arranged, and the Council's policies regarding severance have been made consistent with federal personnel rules. Additional Council business practices also have been reviewed and updated, and an executive committee of Council members has been formed to oversee business and personnel practices.

The Council added several new mechanisms for informing and involving citizens of the Pacific Northwest in fish, wildlife and energy issues this year. In August, the Council launched its Internet "homepage" (nwppc.org), from which most Council documents can be obtained. The homepage also carries background information on Council members and staff, overviews of key issues the Council is addressing and linkages to numerous other relevant sites on the Internet, including the state homepages of Idaho, Montana, Oregon and Washington. Council staff are meeting with staff from other Northwest Internet sites to coordinate regional efforts, reduce overlap and ensure broad distribution of useful information. The Council also added an automated information retrieval system in 1996 that enables interested citizens to call in and have publications sent, e-mailed or faxed to them directly. The system can also be used to comment on Council issues (comment@nwppc.org).

In recognition of the competitive pressures on costs throughout the electric power industry, and especially at the Bonneville Power Administration, the Council has reviewed and cut its operating budget for Fiscal Year 1997.

Finally, in Fiscal Year 1996, the Council has continued to support, monitor and evaluate implementation of both its 1991 Power Plan and its Columbia River Basin Fish and Wildlife Program.

All of these topics are described in more detail in the following sections.

MAJOR FISH AND WILDLIFE ACTIVITIES OF FISCAL YEAR 1996

GOVERNANCE AND IMPLEMENTATION

In 1996, the Northwest Power Planning Council took up one of the thorniest issues confronting fish and wildlife restoration efforts in the Pacific Northwest — the question of governance. The problem is that multiple government agencies with multiple statutory authorities are working collectively, and sometimes at odds, to rebuild fish and wildlife populations. The Council responded to a directive from Congress to report on the most appropriate form of governance to afford the region greater authority in fish and wildlife recovery decision-making. This section of the annual report covers the Council's governance recommendations and reviews implementation of the Columbia River Basin Fish and Wildlife Program.

Improving Implementation and Coordination

The Council's fish and wildlife program relies on the partnership of funding sources and implementors. The Bonneville Power Administration provides the majority of funding for the projects, research and monitoring of the program. This was a direct program budget of \$113 million in 1996; an increase of \$30 million from 1995 to accommodate new Endangered Species Act requirements and implementation of high priority habitat and production projects. In addition, funding comes from the states, tribes and regional utilities, and from individual fishers, landowners and others who use the rivers.

Some funding also comes from Congress through the National Marine Fisheries Service's Mitchell Act program and directed appropriations to other federal agencies. In 1996, Bonneville is scheduled to reimburse the federal Treasury for about \$38 million for the fish and wildlife activities of the U.S. Army Corps of Engineers, the Fish and Wildlife Service, the Bureau of Reclamation and the Council. Bonneville also must make scheduled annual payments to repay funds advanced by the federal Treasury to construct fish passage facilities at the mainstem dams and other fish mitigation facilities, such as hatcheries and screens at irrigation projects. In 1996, Bonneville's scheduled payment for this accumulated debt is \$73 million. This annual payment is projected to rise to \$156 million by the year 2001, as additional fish mitigation and passage improvements are completed.

Six-Year Budget for Bonneville Fish and Wildlife Costs

In September 1995, the Clinton administration reported to Oregon Senator Mark O. Hatfield that it had agreed to a six-year budget for the Bonneville Power Administration's fish and wildlife costs. In September 1996, the federal agencies, in consultation with the Council and Northwest Indian tribes, negotiated a memorandum of agreement to implement that budget commitment. According to the agreement, Bonneville will absorb the financial consequences of the hydropower operations currently specified in the biological opinions regarding endangered salmon recovery and in the Council's program. Bonneville will also provide an annual average of \$252 million, plus interest, for fish and wildlife expenditures called for in the Council's program and other obligations on Bonneville. The memorandum of agreement also includes provisions for budget management and accountability, which were sought by the Council and the tribes.

Prioritizing Fish and Wildlife Expenditures

Regional fish and wildlife managers made significant progress in 1996 in developing a cooperative process to prioritize available Bonneville funding for implementation of the program. Prior to Fiscal Year 1996, Bonneville, on its own, selected and allocated funds for program measure implementation.

For the Fiscal Year 1996 budget, Bonneville and the Council agreed to a process that would seek the recommendations of the fish and wildlife managers for budget allocations among ongoing and proposed

projects. The managers, working through the Columbia Basin Fish and Wildlife Authority, completed their recommendations and saw them adopted by the Council in September 1995. Through Fiscal Year 1996, Bonneville has adhered to these adopted recommendations or consulted with the Council and the fish and wildlife managers when revisions were considered.

For Fiscal Year 1997, the Council and the managers continued to expand this prioritization process to offer more opportunity for public review and comment, and organization of ongoing and proposed projects into a subregional planning approach. In future years, the managers and the Council expect to broaden the prioritization process to coordinate budgeting for the full range of Bonneville's fish and wildlife expenditures, not just those in the Council's program, and to link implementation planning to other fish mitigation activities.

The managers' initial budget recommendations for Fiscal Year 1997 were presented to the Council in May 1996, significantly earlier than last year's. The Council distributed the draft recommendations for public review and comment. The Council then worked with the managers to respond to the comment and consider revisions to the draft recommendations prior to the initiation of project contracting in Fiscal Year 1997. At its August meeting in Astoria, Oregon, the Council approved most of the priorities, noted that about a dozen need additional scrutiny before funding, and found two to be inconsistent with the fish and wildlife program. The approved projects total to about \$125 million in expenditures.

Implementation Structure and Recovery Plan Coordination

The Council focused attention in 1996 on improving coordination of the implementation of its program with Endangered Species Act recovery efforts for the listed Snake River salmon. Although the program and the draft recovery plan for Snake River salmon contain similar provisions, there are different goals and approaches, which result in different implementation schedules, projects and management structures. For funding allocations, Bonneville responds to biological opinion requirements as mandatory and program measures as subject to prioritization among remaining available funds.

The Fisheries Service and the Council have improving coordination between the program and the Endangered Species Act. For example, the Council's "Independent Scientific Group" was expanded to accommodate members who were appointed by the Fisheries Service. The new group will be called the "Independent Scientific Advisory Board." The Board will review both the Fisheries Service's recovery plan and the Council's program. The Council and the Fisheries Service also agreed to jointly chair the System Configuration Team, a panel of river operators and fish and wildlife managers that reviews and schedules implementation of mainstem passage improvement measures.

The Council's Fish Operations Executive Committee is meeting concurrently with the National Marine Fisheries Service's Implementation Team on a trial basis in 1996 to focus regional river operation advisory discussions in a common forum.

As the National Marine Fisheries Service continues to develop an implementation structure for its recovery plan measures, the Council is seeking out opportunities to integrate that work with program implementation and with the objectives of tribal restoration plans. Council intent is to reduce duplication of processes and demands on the time and energy of involved regional agencies and tribes.

Toward this end, federal, state and tribal fishery managers and the Council are working together to develop a five-year work plan that will integrate common elements of the Council's, the Fisheries Service's and the Indian tribes' recovery plans. The plan will address anadromous fish, resident fish and wildlife. It will focus on moving forward in the areas where there is agreement among the three existing recovery efforts, while at the same time identifying remaining issues for subsequent resolution. The five-year work plan is expected to be completed in November 1996. The Council intends to circulate the plan for public comment.

Report to Congress

The 1996 Energy and Water Appropriations Act directed the Council to conduct a 180-day study to recommend improvements in regional fish and wildlife governance. The Council convened state, tribal and federal representatives for a two-day workshop in February to develop alternative structures. After the workshop, the Council engaged in an extensive regionwide discussion of the issues with interested parties.

The Council then developed a set of recommendations for public review and comment. After reviewing the public comment, the Council finalized its recommendations and submitted its report to Congress. The report includes the following key conclusions:

First, there is broad consensus that federal, state and tribal fish and wildlife efforts should be consistent with each other. The Council supports and will continue to help facilitate efforts to bring sovereigns together periodically, on a basis of equality, to work toward a single fish and wildlife program and to coordinate technical and policy aspects of implementation. Over the past year, federal, state and tribal entities have been working together in a more constructive manner. If these collaborative efforts fail, legislation will be needed. The Council recommends that an executive order be developed to help cement cooperation and greater consistency. An executive order should direct the federal agencies to implement the Council's Columbia River Basin Fish and Wildlife Program, insofar as is permitted by their statutory responsibilities, and to provide detailed, written explanations if they diverge from the program.

Second, if legislation is needed, the Council recommends that the federal agencies that govern operations of the hydropower system — the U.S. Army Corps of Engineers, the Bureau of Reclamation, the Federal Energy Regulatory Commission and the federal fish and wildlife agencies (the National Marine Fisheries Service and the Fish and Wildlife Service) insofar as their activities affect hydropower operations — be required to act consistently with the fish and wildlife program developed under the Northwest Power Act. Importantly, this change would not modify the Endangered Species Act.

Third, the Council commits to play an active role in monitoring implementation of fish and wildlife mitigation measures. Based in part on the requirements of the Northwest Power Act, mitigation funding can be linked to progress in implementing a monitoring and evaluation program.

REBUILDING SALMON POPULATIONS

As noted in the Overview, some chinook salmon runs and sockeye in the Columbia River Basin have improved over last year's runs, but they are still well below 10-year averages. Scientists have not confirmed any particular reasons for the increases.

Steelhead runs continue to decline. Steelhead populations along the West Coast are under consideration by the National Marine Fisheries Service for listing under the federal Endangered Species Act. Coho runs are also down from last year's.

Salmon Counts at Bonneville Dam			
Fish species	1996	1995	10-Year Average
Spring chinook*	56,180	12,569	80,037
Summer chinook*	17,994	17,060	26,775
Fall chinook* (as of 9/19/96)	192,113	167,004	217,203
Coho	7,877	12,528	24,173
Sockeye	30,255	8,771	60,934
Steelhead	187,954	188,285	237,989
*Includes jacks (immature returning males).			

Mainstem Measures

Juvenile Salmon Migration

The section of the Columbia River Basin Fish and Wildlife Program with the greatest regional economic impact is the set of measures designed to increase survival of juvenile salmon as they migrate downstream past the Snake and Columbia river dams. The Council first adopted a "water budget" in 1982 to reserve 3.45 million acre-feet of upper Columbia water during the winter, plus 1.19 million acre-feet of Snake River water, to be released in the spring when juvenile salmon are migrating. In 1992, the Council added an additional 3 million acre-feet to this storage reserve in the Columbia and identified volumes of more than 1.4 million acre-feet for spring migrants and about 900,000 acre-feet for summer and fall migrants to be reserved in the Snake system in the driest water years. These new volumes replaced the earlier 1.19 million acre-feet in the Snake River and represent the maximum attainable volumes for salmon flows called for in the fish and wildlife program. In 1994, the Council added another million acre-feet for spring flows in the Columbia River and 400,000 acre-feet for summer migrants. The Council also asked that another 1.2 million acre-feet of Snake River water be obtained from Dworshak and Brownlee reservoirs and through voluntary measures from the upper Snake River Basin. These water reserves result in constraints on winter power sales and even periodic power purchases from outside the region to meet winter energy demands, as well as operating constraints on storage reservoirs.

Actual power system operations aim to be consistent with the terms of the National Marine Fisheries Service's 1995 biological opinion for the federal power system regarding Snake River salmon and the U.S. Fish and Wildlife Service's biological opinion for Kootenai River sturgeon. The biological opinion regarding endangered Snake River salmon does not provide the same level of protection for resident fish in upriver storage reservoirs as the Council's program. The Council adopted specific "integrated rule curves" to regulate reservoir drawdowns and protect resident fish and wildlife at Hungry Horse and Libby dams in Montana. It also adopted water retention times and specific elevation levels for Grand Coulee Dam. Water retention times and reservoir elevations adopted by the Council in 1995 to protect resident fish are not met in the biological opinion. The biological opinion for Snake River salmon devotes more water from the upper Columbia to salmon flows and less from the Snake River.

In addition to revised power system operations, the Council's program also calls for modifying the dams to improve salmon passage. These measures include continuing to install screens in front of the turbine intakes at each dam and testing new surface bypass facilities to guide salmon safely around the dams. The measures also call for operating the John Day Dam on the Columbia and two of the Snake River dams at lower levels

beginning in 1996. These operations will require costly modifications to the dams and mitigation of impacts to irrigators and other reservoir users. The program conditions implementation of these operations on prior completion of the mitigation.

1996 Flow Operations

Water levels in the Northwest's 1996 water year are about 120 percent of average (as measured at The Dalles Dam), a result of significantly improved snowfall and record rainfall, continuing a trend of relief from the drought conditions of the late 1980s and early 1990s. River flows through the spring juvenile salmon migration in both the Columbia and Snake rivers were well above targets in the Council's fish and wildlife program and in the biological opinion, peaking at 200,000 cubic feet per second. Flows averaged 136,000 cubic feet per second in the Snake River. Columbia River flows averaged 356,000 cubic feet per second.

In 1996, large spill volumes occurred at all mainstem hydroelectric projects on the Snake and Columbia rivers during the spring runoff — throughout April, May and June. The large spill volumes at federal Columbia River hydropower system dams were the result of problems related to limitations in project hydraulic capacity, high levels of water stored in reservoirs for fish flows and lack of energy markets, *not* spill for fish passage. Spill occurred even at headwater storage projects, including Hungry Horse, Albeni Falls, Grand Coulee and Dworshak dams. This forced spill significantly increased the juvenile fish passage efficiency at most mainstem projects and reduced migration delays in 1996. With the high flows and spill conditions, however, there were concerns with adult salmon passage delays and fallback, particularly at Bonneville Dam.

In spite of implementing gas reduction measures and shifting spill away from mainstem dams, in 1996 total dissolved gas levels routinely exceeded state water quality standards at all sites except the Lower Granite forebay. While Oregon, Washington and Idaho granted waivers to exceed their state dissolved gas standards, gas levels surpassed even the levels set in the waivers. Total dissolved gas levels exceeded 130 percent for extended periods and at times approached 140 percent in the Ice Harbor Dam tailrace, and below John Day and Bonneville dams. When spills were at their highest, signs of gas bubble trauma were detected in large percentages of the juvenile salmon examined. In general, however, the symptoms were below criteria established in the National Marine Fisheries Service's biological monitoring program. In the instances where the gas bubble trauma monitoring criteria were approached or exceeded, few fish exhibited severe gas bubble trauma symptoms.

River operators tried to manage flows to reduce spill. In some cases, excess water was stored in Grand Coulee, Hungry Horse, Libby, Dworshak and Brownlee reservoirs. Spill was spread out over many dams, including some that are outside the migration corridor, to try to reduce gas supersaturation at individual dams. Bonneville tried to sell more power out of region to justify running water through the turbines rather than spilling it. By mid-July, rainfall and runoff declined, and dissolved gas levels dropped to below 120 percent (the state waiver level) at most projects.

Mainstem Passage Improvements

Surface bypass systems: The Corps of Engineers is continuing to test a prototype surface bypass system at Lower Granite Dam. This project is being developed to improve juvenile fish survival at the dams by collecting smolts migrating near the surface of the river and passing them safely over the spillway. The Corps' surface bypass experiments with different designs at various dams and spillways are scheduled to continue through 1998.

Extended-length screens: The Corps completed installation of extended-length screens in front of turbine intakes at Lower Granite Dam in March 1996. The Corps is also completing installation of extended-length screens at Little Goose and McNary dams. These screens are intended to further reduce the percentage of migrating smolts passed through dam turbines and divert them into the juvenile bypass systems at the dams. Installation of screens at The Dalles Dam continues to be deferred pending testing of surface collector designs at that project.

Gas abatement facilities: To reduce levels of dissolved gas that results from spilling water at the dams, the Corps is completing designs of "flip lips" at Ice Harbor and John Day dams. Construction of facilities at Ice Harbor is expected to begin in the fall of 1996 and at John Day in the fall of 1997. These spillway deflectors should help reduce total dissolved gas levels below these projects by as much as 10 percent.

Drawdown: Evaluations of reservoir drawdown strategies have been substantially altered and extended as a result of the continued debate over their biological effectiveness and economic impacts. For Lower Snake reservoir drawdowns, the Corps and the National Marine Fisheries Service have proposed that there be no further evaluation of intermediate drawdown measures and that future studies focus on "natural river" options, where modifications to the dams permit lowering the reservoirs to their original levels and routing the free-flowing river around the dams.

Congress has restricted funding for further evaluations of reservoir drawdowns at John Day Dam. The 1996 Energy and Water Appropriations Act provided \$1 million for continued evaluation, but directed the National Marine Fisheries Service to provide scientific justification for a drawdown of the John Day pool before requesting funding for further evaluations and design of a drawdown strategy.

Transportation

The Council's program calls for a "spread-the-risk" strategy for choosing whether to keep migrating juvenile fish in the river or diverting them into the truck and barge transportation system that carries fish around the dams to the Columbia estuary. In most years, the strategy calls for dividing migrating Snake River juveniles evenly between inriver migration and transportation. The Fisheries Service sets actual management terms through its biological opinion on the hydropower system. In 1995, the Fisheries Service called for collecting substantially more migrating juveniles in the transportation system than the Council's program recommends. More than 70 percent of the migrating juveniles were transported. In 1996, about 55 percent of the spring migrants from the Snake River Basin were transported.

To improve transportation conditions, both the Council's program and the biological opinion call for the addition of more barges to reduce holding times at the juvenile collection projects. The National Marine Fisheries Service recommended funding for building additional barges beginning in 1997, but several fish and wildlife agencies have argued that construction of additional barges is not justified, given budget constraints and the projected low populations of migrating juveniles in coming years. This issue is being evaluated by the System Configuration Team.

Predator Control and Harvest Enforcement

Under the Council's program and the terms of the biological opinion, Bonneville also funds two substantial programs to improve juvenile and adult salmon survival in the Columbia River. The first is a targeted fishery on bigmouth minnows (squawfish). This project has been in place since 1991 and continues to use a targeted fishery and a bounty program to encourage fishing for the salmon predators. In the prioritization process for Bonneville's 1997 budget, fishery managers recommended that a project be funded to evaluate methods to reduce bird predation on juvenile salmon.

Bonneville continues to fund expanded law enforcement to discourage poaching of salmon in the Columbia River. This is a cooperative program involving state and tribal law enforcement agencies. The fish and wildlife managers are considering budget recommendations to expand the law enforcement presence into the tributaries of the Columbia River and also into Montana, to reduce illegal activities affecting fish and wildlife in that state.

Habitat and Production Measures

In 1996, the region saw significant progress in implementing habitat improvement and production measures under the Council's program. A major initiative led by the Columbia River Inter-Tribal Fish Commission was funded to begin watershed restoration projects. Genetics and environmental reviews of tribal production programs were nearly completed. Construction on these projects is about to begin. Experimental supplementation projects were initiated. Audits of hatchery facilities and practices using newly established regional criteria were begun. While a comprehensive inventory of naturally spawning salmon and steelhead populations has not been initiated, it is being addressed in the five-year implementation work plan process.

Subregional Approach

The program's focus on habitat and production measures is guided by watershed-based coordination. In the late 1980s, the region's fish managers developed subbasin plans for each of the 31 major watersheds of the Columbia River that support anadromous fish. These plans set out priority measures to improve salmon and steelhead production and address critical habitat problems. Implementation of the plans was delayed when the region's focus shifted to high-priority actions responding to the listing of Snake River salmon for protection under the Endangered Species Act.

In 1995, the Yakama, Warm Springs, Umatilla and Nez Perce tribes released updated tributary watershed recommendations as part of their draft *Wy-Kan-Ush-Mi Wa-Kish-Wit* anadromous fish restoration plan. The tribes developed a program of locally based watershed project proposals coordinated with their production programs.

In May 1996, the Council approved the reallocation of \$6 million in Bonneville funds to implement tribal priority watershed projects. The funds had been reserved for the biological opinion research agenda. The Council specified that implementation of the watershed projects should be coordinated within the subregional habitat and production approach established by the program. This effort was further bolstered by the fishery managers' 1997 project prioritization process.

Biodiversity Goals: Carrying Capacity, Natural Production

The program seeks attention by the region's fishery managers to complex questions about the capacity of the Columbia ecosystem to support salmon and a more thorough inventory and management framework for naturally spawning populations.

Bonneville contracted for an initial review of existing scientific information about the carrying capacity of the Columbia River and recommendations for additional research. Organized by Battelle Laboratories, a workshop to review the literature was held in Portland. Papers from the workshop have been released by the Bonneville Power Administration.

The program also seeks a status review of naturally spawning populations. While individual agencies and tribes have natural production policies and priorities for individual populations, they have not been gathered into a regional inventory and management policy coordinated with the rest of the program. In the 1997 prioritization process, the Council directed fishery managers to address the natural production section of the fish and wildlife program in the 1998 work plan. Natural production measures are being incorporated into the five-year implementation work plans.

Hatchery Improvements

In 1995, the Council accepted the fishery managers' recommended policies for hatchery operations and performance. These policies were called for in the program to establish common regional practices and standards for hatcheries. The policies address factors such as genetics, fish health and water quality. The program calls for these policies to be used by an independent team of experts to regularly audit hatchery

facilities. Bonneville budgeted funds to begin the audits in 1996. The Council supports this auditing process and has urged managers to expedite the process.

New Production — Tribal Hatcheries, Supplementation Projects

There was significant progress in 1996 on long-awaited tribal salmon production projects. These facilities have been central to the planning for salmon restoration above Bonneville Dam since the mid-1980s. New concerns about genetic risks and the complications of the Snake River salmon listings delayed the projects through the first half of the 1990s, while additional environmental reviews were conducted.

Yakima-Klickitat Production Project: The final environmental impact statement was completed and construction work began in June on the central hatchery facility at Cle Elum, Washington. Additional satellite facilities will be constructed in coming years. The project expects to release its first juvenile salmon into the Yakima River in 1999.

Nez Perce Tribal Hatchery: An environmental review of the Nez Perce facility was continued in 1996, with construction expected to begin in 1997. The project was adopted into the program in 1992 to rebuild salmon populations in the Clearwater River Basin.

Northeast Oregon Hatchery: The Nez Perce and Umatilla tribes are continuing to develop plans for restoration of salmon in the Grande Ronde and Wallowa river basins. These projects are being developed in coordination with the Lower Snake Compensation Plan.

Hood River Production Program: The Confederated Tribes of the Warm Springs Reservation began the operation of acclimation facilities to release juvenile steelhead into the Hood River in 1996. With the release of the steelhead, the tribes began implementing a cooperative project with the Oregon Department of Fish and Wildlife to re-establish spring chinook and improve the steelhead population in the Hood River watershed. The project uses a portion of the fish ladder at the Pelton Dam on the Deschutes River to rear fish native to the Hood River. The project also includes construction of acclimation ponds to improve juvenile survival and passage improvements at the Powerdale Dam.

Umatilla Hatchery: The Umatilla Hatchery began operating in 1991 to restore spring and fall chinook and summer steelhead to the Umatilla River. The hatchery is coordinated with passage improvements and the Umatilla Basin Project to improve fish survival and provide adequate flows in the river. The Confederated Tribes of the Umatilla Reservation are seeking expansion of the project into the Walla Walla River watershed.

Experimental Supplementation Projects: In March 1996, the Council approved funding for 15 experimental projects to use artificial production to improve naturally spawning salmon populations in selected rivers. These projects were originally proposed to and adopted by the Council in 1991 and 1992 for early implementation. However, because of reservations expressed by the National Marine Fisheries Service regarding potential Endangered Species Act problems over the use of hatchery fish to supplement naturally spawning stocks, none of the proposed projects was implemented. After the Fisheries Service approved the project list in early 1996 as in compliance with the Endangered Species Act, implementation was begun with Bonneville funding.

Cooperative Approach to Habitat Improvements — Model Watersheds

The states of Oregon, Washington and Idaho continued to implement habitat improvement projects using locally based cooperative watershed planning. Bonneville funded local coordinators in each state to develop local involvement in planning habitat projects. Bonneville continues to contribute a share of funding for the projects themselves, with additional funds coming from federal, state and local sources. In Washington, the model watershed effort is focused in the Asotin and Tucannon creek watersheds. Oregon focuses on the Grande Ronde watershed. Idaho focuses on the Lemhi and Pahsimeroi watersheds.

Recently, the Council approved implementation of new watershed approaches for Fiscal Year 1996. These are the Clearwater River in Idaho, the Kootenai and Flathead rivers in Montana, the McKenzie River in Oregon and the Okanogan River in Washington.

Tributary Passage Improvements — Diversion Screening

Since 1992, a cooperative program among regional fishery managers has focused on installing and upgrading screens and passage facilities to divert salmon from irrigation channels in the Columbia River Basin. The program has been largely funded by the federal government through Mitchell Act funds. Bonneville has funded the construction of diversion screen fabrication shops and most of the large diversion screens in the Yakima and Umatilla rivers. From 1992 to 1995, the Mitchell Act portion of the program treated 232 gravity irrigation diversions and 123 pump intakes. Mitchell Act funds were reduced by Congress in 1996, and the coordinators of the screening program reported to the Council that the decline in funding would slow completion of the regional screening program. In discussions of the program, the Council has expressed concerns that stable funding, operating and maintenance agreements with water users be addressed.

Salmon Harvest

The Council's fish and wildlife program calls for harvest restrictions to protect Columbia River Basin salmon, particularly endangered Snake River salmon. This year, as in 1995, the Pacific States Fishery Management Council severely restricted or, in some areas, eliminated salmon harvest off the coasts of Washington and Oregon. Specifically, the Fisheries Management Council adopted four options for ocean fishing in the summer and fall, ranging from a more liberal season than in 1995 to a more restricted season. Limited commercial and recreational fishing for spring salmon was allowed in the Columbia and off the Washington and Oregon coasts.

Harvest Alternatives: Youngs Bay and Other Approaches

The Council's program calls on the fisheries managers to propose a variety of alternative harvest opportunities and techniques while fishing in the mainstem Columbia River is restricted to promote upriver restoration. The managers have generally considered such proposals as testing selective harvest equipment or live-catch methods as low priorities. With Bonneville funding, testing of alternative fish rearing sites on the lower Columbia River has continued.

Since 1992, Bonneville has funded the Oregon Department of Fish and Wildlife's Youngs Bay terminal fishery project near Astoria, Oregon. The project rears hatchery fish in net pens located inside Youngs Bay, which is off the main channel of the Columbia, and at other sites. The project's purpose is to increase the number of hatchery fish returning to Youngs Bay where they can be harvested with little chance of inadvertently catching salmon returning through the main channel of the Columbia River to spawn upstream. In the initial years of the experiment, the project allowed brief fishing seasons in Youngs Bay and is now testing additional sites on the lower river to expand off-river fisheries.

Salmon and Steelhead — Research, Monitoring and Evaluation

Independent Review of Science

In March 1995, the Independent Scientific Group initiated its first biennial review of the research and scientific literature underlying the Council's program. These reviews were called for in the December 1994 Columbia River Basin Fish and Wildlife Program. The scientists also were asked to propose a conceptual foundation for the salmon restoration effort. On September 18, 1996, the scientists presented their findings to the Council. Their report, "Return to the River: Restoration of Salmonid Fishes in the Columbia River

Ecosystem," includes both the conceptual foundation and the review of the science underlying existing salmon restoration measures in the fish and wildlife program. The work should provide an overall scientific structure against which decisions for salmon restoration can be tested. The scientists' findings constitute one of the reasons for the Council's decision to reopen the fish and wildlife program for amendments.

There are three key concepts in the conceptual foundation:

1. Restoration of Columbia River salmon must address the entire natural and cultural ecosystem, which encompasses the continuum of freshwater, estuarine and ocean habitats where salmon complete their life histories. This consideration includes human developments, as well as natural habitats.
2. Sustained salmon productivity requires a network of complex and interconnected habitats, which are created, altered and maintained by natural physical processes in freshwater, the estuary and the ocean. These diverse and high-quality habitats are crucial for salmon spawning, rearing, migration, maintenance of food webs and predator avoidance.
3. Life history diversity, genetic diversity and metapopulation organization are ways salmon adapt to their complex and connected habitats. These factors contribute to the ability of salmon to cope with environmental variation that is typical of freshwater and saltwater environments.

All of these elements combine into what the scientists refer to as the "normative ecosystem," an ecosystem that, as much as possible, recreates the ecological conditions that sustained salmon before the river basin was developed, but one that also accounts for the fact that the basin has been developed and that development of the basin continues. The scientists analyzed the Columbia River Basin Fish and Wildlife Program using these concepts as a "filter." They concluded that the program appears to be based on a fundamental assumption that the ecological processes that result in a healthy salmon population can be, to a large degree, "circumvented, simplified and controlled by humans." Based on that overriding conclusion, the scientists identified three further assumptions in the fish and wildlife program:

1. The number of adult salmon made available to spawn is primarily a direct response to the number of smolts produced. (More young fish will automatically result in more adult spawners.)
2. Salmon production can be increased by actions taken within the river without accounting for conditions in the estuary or ocean.
3. Management actions will not compromise environmental attributes of the ecosystem that supports salmon.

In their detailed analysis, the scientists went on to evaluate the above assumptions based on available scientific data. They note that many of the measures in the fish and wildlife program respond to individual problems, and they represent "credible scientific approaches to these problems." They reflect a "good faith effort by the Council and the region's fisheries managers" to recover salmon populations. However, the scientists add that the above assumptions have driven fisheries managers toward actions that are best characterized as "technological substitutes for ecological processes: hatcheries and mechanisms for improving salmon survival at hydroelectric projects, rather than actions that look at the broader context of salmon life history, behavior and habitat." They conclude that the continuing decline of the basin's salmon populations indicates that the assumptions in the current fish and wildlife program and those actions that are based on the assumptions will not likely lead to salmon recovery.

The scientists maintain that recovery of Columbia River Basin salmon populations will require that the region turn from more technological approaches to an integrated approach that incorporates a comprehensive understanding of salmon life cycles. They suggest the following:

1. Recognize explicitly that salmon in the Columbia Basin exist naturally as collections of locally adapted populations that are organized into core and satellite populations known as metapopulations. To increase total production, management decisions should nurture such life history and population diversity. That diversity will require protection for the remaining core populations, which appear to provide replacement

stock for declining population groups, and restoration and reconnection of potential core habitats at strategic areas within the basin. The scientists suggest that the Hanford Reach, the last free-flowing stretch of the Columbia, should be a model for this management approach.

2. Protect and restore freshwater habitat for all life history stages with a focus on key Columbia River and tributary reaches and lakes. This approach would include: restoration of the spring freshet to revitalize inriver habitats; stabilization of daily fluctuations in flows to allow food webs to persist in shallow water habitats that are important juvenile rearing areas; provision of incentives for watershed planning that emphasizes riparian and upland land-use activities that enhance instream and lake habitats; and identification of food web compositions and other key conditions that are critical for migrating juveniles in key habitats.
3. Manage stocks with a more complete understanding of migratory behavior and the limitations that migratory behavior could place on river operations. The scientists found that the Columbia and Snake rivers should not be viewed merely as conduits through which young salmon passively migrate to the sea. They learned that the young fish have life-cycle requirements that must be met during their downstream migration through the mainstem habitat. Fishery managers need to better understand these needs and manage accordingly.
4. Reduce sources of mortality throughout the salmonid ecosystem, including the ocean and the estuary, as well as the rivers and tributaries of the Columbia River Basin.
5. Current and future salmon recovery measures should correspond to the normative ecosystem concept and be evaluated for their effectiveness in meeting stated objectives. For example, an approach whose goal is a normative ecosystem would highlight habitat restoration, rather than more technological mechanisms, such as transporting fish in barges or producing them in hatcheries. Hatcheries and transportation should be used selectively and experimentally, and they should be monitored carefully. The fish and wildlife program as a whole needs an integrated ecosystem monitoring and evaluation program.
6. Recognize that estuary and ocean dynamics are important regulators of the patterns of salmon productivity. While repairing conditions in the ocean is difficult, if not impossible, some management actions can be taken to improve the biological sustainability of these environments. For example, managers can regulate harvests to maintain viable food chains, they can set sustainable escapement targets so sufficient numbers of spawning pairs are allowed to reach upriver habitats, and they can implement hatchery protocols that respond to natural fluctuations in ocean productivity. Estuaries can be improved and protected through pollution abatement, enhancement of riverine flows and restoration of wetland habitats in the estuary.
7. Re-evaluate the concept of salmon reserves as a means of protecting core populations and potential core population habitat. These core populations could enable reseeding of available healthy habitat, which in turn could rebuild salmon abundance and metapopulation structure throughout the Columbia Basin. The region should consider establishing a salmon reserve in the vicinity of the confluence of the Snake and Columbia rivers, including the Hanford Reach.

The Council plans to distribute broadly the findings of the Independent Scientific Group through public meetings and media efforts. The Council and the scientists agree that these findings do not constitute a new fish and wildlife program or another set of recovery measures. They are not intended as policies. They should be viewed as a coherent set of information on which policies and new measures can be based. The scientists also point out that, as in all ecosystems, their findings and their proposed conceptual foundation are dynamic. The information and the foundation will grow and be altered by new understandings in the basin.

Creation of the Independent Scientific Advisory Board

For several years, the Council has impaneled a group of experts to advise the region on scientific aspects of program implementation. In 1996, this group's efforts were focused on the review of science described above. With the National Marine Fisheries Service's draft recovery plan for Snake River salmon calling for similar scientific guidance, the Council and the Fisheries Service agreed in 1996 to utilize the same panel for the twin purposes of the Council program and the recovery plan.

The existing Independent Scientific Group was expanded from nine members to 11 to provide more expertise in needed areas and constituted to be jointly utilized by the Council and the Fisheries Service. It was renamed the Independent Scientific Advisory Board. Members of the Board were nominated by an ad hoc committee of scientists (Dr. John Magnuson, National Research Council; Dr. Donald Bevan, former chair of the Snake River Salmon Recovery Team; and Dr. Lyle Calvin, past chair of the Scientific Review Group).

Research and Monitoring

The fish and wildlife program calls for research into a number of areas to improve scientific knowledge. In 1996, most of the research projects included in the fish and wildlife program are being implemented. However, the biological opinion directs Bonneville to fund a number of research projects, some of which duplicate efforts already under way through the Council's program. As a result, the Council is working with the National Marine Fisheries Service to prepare a coordinated research agenda for 1997. Key areas of ongoing uncertainty include: the relationship between flow and salmon survival, the effects of supplementation on naturally producing populations of fish, and the effects on salmon of dissolved gas due to spill.

In addition, the Council is working to improve tracking and accountability of ongoing and proposed research projects. The Council has developed and maintains an electronic filing mechanism to track performance and accomplishments for individual projects and contracts. Staff also participated in the design of a unified mechanism that can be used to ensure the collection of technical information necessary to prioritize projects.

RESIDENT FISH

The Council's program addresses resident fish losses caused by hydropower development and operation, as well as substitutions of resident fish to compensate for losses of salmon and steelhead in areas permanently blocked by hydropower projects.

Biological Objectives

The fish and wildlife program asks fishery managers to describe biological objectives that will protect and rebuild resident fish populations consistent with the fish and wildlife program's goals. These biological objectives will include success indicators that can help managers evaluate their progress toward achieving interim goals. The Colville Confederated Tribes, the Upper Columbia United Tribes and the Washington Department of Fish and Wildlife have provided the Council with specific actions, strategies and timetables to achieve their biological objectives.

Resident Fish Substitution

Substituting resident fish for salmon and steelhead in areas where salmon are permanently blocked due to the construction and operation of the hydroelectric system is an important element of the fish and wildlife program. Because permanent loss of salmon has had incalculable impacts on the economies, cultures and religions in blocked areas, the fishery managers have helped the Council assemble program measures that will help offset their anadromous fish losses.

The fishery managers identified operating criteria for Grand Coulee Dam to maintain minimum monthly elevations and water retention times so resident fish are not washed over or through the dam and to ensure adequate food supplies are available for resident fish. The managers at Grand Coulee have been asked to collect data that can be used to develop biological and integrated rule curves for Lake Roosevelt.

The Spokane Tribe, Colville Tribe and Washington Department of Fish and Wildlife operate and maintain hatcheries that produce fish for release into lakes and streams in upriver areas. These parties are collaborating

with the Lake Roosevelt Forum, a largely volunteer organization, to produce about 350,000 rainbow trout in net pens for release each year. The effectiveness of these projects is being monitored and evaluated.

Habitat restoration has been used for a number of years to increase fish production in blocked areas. The Colville Tribe has been gathering baseline data so that tributary enhancements and passage improvements can be evaluated. The Coeur d'Alene Tribe has initiated a project that will protect important riparian corridors as well as sensitive wetland and upland areas. Regional fishery managers approved funding for this project with funds carried over from 1995.

In the blocked area above the Hells Canyon Complex, the Shoshone-Paiute Tribes are carrying out projects that stock trout in Duck Valley Reservation lakes, and they have developed a feasibility analysis for a lake fishery at Lake Billy Shaw. Above Dworshak Dam, the Nez Perce Tribe is developing trout ponds on its reservation.

Supplementation Guidelines

The Council's program recognizes that artificial propagation is one means of increasing or introducing fish populations, but that these supplementation activities must be pursued carefully because artificial propagation can detrimentally affect the long-term sustainability of native and introduced species. The program calls for developing basinwide guidelines to minimize genetic and ecological impacts of hatchery fish on wild and natural stocks and submit these to the Council. These guidelines have been developed for anadromous fish, but not for resident fish, and this measure was not proposed for funding in 1997.

Resident Fish Mitigation

Assessments of Losses

The program calls on fishery managers to complete assessments of resident fish losses and gains related to the construction and operation of each hydropower facility in the Columbia River Basin and submit these assessments to the Council for approval. These assessments would include a proposed crediting approach for ongoing and past mitigation activities at each dam. While this measure was included in the December 1994 program, the assessments have only been completed for Hungry Horse Dam. Further assessments were not submitted this year for prioritization by the fishery managers, and they are not funded for 1997. These assessments are important to the Council's determination of the amount of mitigation required for each dam.

Creston National Fish Hatchery Expansion

The program calls on the Montana Department of Fish, Wildlife and Parks and the Confederated Salish and Kootenai Tribes to implement measures in a plan they developed, and which the Council approved several years ago, to mitigate the impact of Hungry Horse Dam on fish in the Flathead River and Flathead Lake. The plan calls for research on kokanee production at facilities that are low-cost and temporary. The intent is to test the feasibility of increasing kokanee populations in the lake and river system.

The state, tribes and the U.S. Fish and Wildlife Service have requested \$650,000 from Bonneville to increase fish-rearing space at the Creston National Fish Hatchery, which is the facility where the kokanee production takes place. The Council has expressed concern that this proposed increase in production is not consistent with the limitation in the Council's program. In 1995, the Council specifically rejected a proposed amendment to the fish and wildlife program that would have removed the "low-cost and temporary" language, thus opening the way for expanded production. The Council considers the kokanee experiment as still being under way and has resisted attempts to expand production beyond the program's requirement of "low-cost and

temporary" production facilities. The Independent Scientific Group also recommended in its recent report, "Return to the River," that the experiment be stopped.

The proposed expansion was included in the Basin Authority's draft list of projects for funding in 1997, but the Council rejected it because it was not consistent with the Council's fish and wildlife program.

Integrated Rule Curves

Integrated rule curves for Libby and Hungry Horse dams, developed by the State of Montana and the Confederated Salish and Kootenai Tribes, were adopted into the fish and wildlife program in 1994 to improve historic dam operational practices, to provide more favorable biological conditions for resident fish in the reservoir and affected river reaches, and to help balance conditions for resident fish and salmon so that the recovery of one is not pursued at the expense of the other.

In 1996, as in 1995, the National Marine Fisheries Service proposed river flows consistent with its 1995-1998 biological opinion that are not consistent with the rule curves, lowering the reservoirs below levels stipulated in the fish and wildlife program. The state of Montana asked the Fisheries Service and federal project operators to implement the rule curves. In August, Montana, the Fisheries Service, the Bonneville Power Administration and B.C. Hydro negotiated a flows agreement for Libby Dam for the remainder of the 1996 salmon migration season. The agreement provided flows from Canada that enabled Montana to draft Libby only 5 to 10 feet rather than draft the 20 feet required by the biological opinion.

Montana also intervened in a lawsuit filed against the National Marine Fisheries Service, in which environmental and fishing groups alleged that the Fisheries Service failed to properly implement the 1995-1998 biological opinion. Among other matters, the plaintiffs objected to an agreement between the Fisheries Service and the state of Montana in the summer of 1995 concerning reservoir levels behind Libby and Hungry Horse dams. Montana argued that the Fisheries Service correctly provided water for anadromous fish yet also afforded water and protection for the state's resident fish. In late July, the parties to this lawsuit (known as the "American Rivers" lawsuit) worked out an agreement on operations for the remaining 1996 water year. The agreement rendered moot an injunction request on river operations for this year, but does not settle the entire lawsuit.

Lake Pend Oreille Kokanee Populations

Kokanee populations in Idaho's Lake Pend Oreille are low and variable, and the Council's program calls for research to better understand the causes of the decline. For Fiscal Year 1997, the Columbia Basin Fish and Wildlife Authority included money in its list of prioritized projects to pay for developing a scope of work for this research.

Study and Evaluate Sturgeon Populations

Sturgeon once were abundant in the Columbia River Basin. Some populations have declined, raising concerns about the long-term sustainability of the species. White sturgeon in the Kootenai River are listed as an endangered species, and the U.S. Fish and Wildlife Service is preparing a recovery plan. A draft of that plan is currently out for public comment. Research into the status of various sturgeon populations in the Columbia River Basin continued under the Council's program in 1996, and the work was included in the Basin Authority's list of priority resident fish projects for 1997.

WILDLIFE

Development of the hydropower system in the Columbia River Basin affected many species of wildlife as well as fish. Some floodplain and riparian habitats important to wildlife were inundated when reservoirs were

filled. In contrast, some species of wildlife benefited from development of the hydropower system. Creation of reservoirs behind dams provided important resting, feeding and wintering habitat for waterfowl.

According to the Council's program, measures to protect, mitigate and enhance wildlife affected by hydroelectric development should consider the net effects on wildlife associated with hydropower development. Through the program, lost wildlife habitat is calculated on the basis of habitat units, which vary for each type of bird or animal. The Council's program directs Bonneville to fund the acquisition of habitat units or other mechanisms as compensation for the impact of the dams.

Through the Council's program, ratepayer money is being spent to acquire habitat units in Idaho, Oregon and Washington. Bonneville signed a wildlife mitigation agreement with the State of Montana in 1988 and with Washington in 1993, but there is no funding proposed to continue negotiations with Idaho and Oregon on similar agreements.

As part of the Washington wildlife agreement, Bonneville has completed memoranda of agreement with the Spokane Tribes, the Yakama Indian Nation, and the Colville Tribe. Agreements are expected to be completed by October 1, 1996, with the State of Washington and with the Confederated Tribes of the Umatilla Indian Reservation.

In the absence of long-term agreements, Bonneville continues to acquire habitat units on a project-by-project basis. The most significant acquisition in 1996 involves a former cattle ranch in northeast Oregon. The Council, Bonneville and the Nez Perce Tribe are working on completing the purchase of the 10,300-acre property as partial mitigation for the impact of federal dams on the Snake River. An adjoining 6,200 acres is being sought, as well. The land will be managed by the Nez Perce Tribe. In late August, a memorandum of agreement and contract were negotiated to complete this purchase. Final papers are expected to be drawn up imminently.

MAJOR POWER PLANNING ACTIVITIES OF FISCAL YEAR 1996

A NEW APPROACH FOR CHANGING TIMES

Rapid change is occurring in the electricity industry, both nationally and internationally. Changes are under way that will lead the industry from the regulated monopoly structure of the past 50 years to a more competitive model. There are significant opportunities to be gained from a more competitive utility market — opportunities for lower-cost power, innovations in electricity services and more choices for consumers. At the same time, there are significant risks — risks that competition will not be as effective as it could be; that the benefits of competition will not be shared fairly by all consumers; and that competition may make it more difficult for the region to achieve its goals in conservation, renewable resources and environmental quality. These changes call for a new approach to meeting the goals of the Northwest Power Act.

In January 1996, the governors of Idaho, Montana, Oregon and Washington initiated the Comprehensive Review of the Northwest Energy System to respond to the changes occurring in the industry. Development of the Draft Fourth Northwest Power Plan had already begun. In March 1996, the Council released the draft plan for public comment. This draft plan is unlike previous Council power plans in that it contains almost no proposed actions for the region to take at this time. Instead, it describes the changing electricity industry, analyzes some of the consequences of a more competitive power market, and suggests some alternative strategies the Northwest may adopt in response to industry changes. Power planning activities in Fiscal Year 1996 focused on developing the Draft Fourth Northwest Conservation and Electric Power Plan and supporting the work of the Comprehensive Review.

NORTHWEST POWER IN TRANSITION: OPPORTUNITIES AND RISKS

The Draft Fourth Northwest Conservation and Electric Power Plan was developed as fulfillment of the Power Act mandate to prepare and adopt “a regional conservation and electric power plan” and review that plan at least every five years. The Council’s last plan was adopted in 1991.

The timing of the draft plan, in light of the governors’ review, requires a different approach than that taken in previous Council power plans. Consequently, the draft contains few recommended actions or policy decisions. It is instead a reference tool, containing background on the industry and its current restructuring, as well as analysis of some of the major issues that must be addressed as the Northwest advances toward its new energy future. Because the Bonneville Power Administration, which markets about half the electricity generated in the Northwest, and the Council itself will be profoundly affected by the transformation of the industry, issues related to their futures are also explored in the draft.

The goal of the draft plan mirrors and supports the governors’ goal in setting in motion the Comprehensive Review. Consequently, the Council will keep the draft plan open for public review and comment until March 14, 1997. It is anticipated that the Comprehensive Review will be completed by that time, and its conclusions and recommendations, along with public comment, can be incorporated into the new power plan as appropriate.

The draft plan explores opportunities, risks and challenges inherent in the transition to a competitive electric services industry. The plan includes:

- A description of the forces pushing the industry toward more competition;
- A discussion of the principles and characteristics of effective competitive markets;
- A review of the status of and recent changes to the power system;

- An examination of the underlying trends and uncertainties in the demand for power, fuel prices, the West Coast power market, and the requirements for fish and wildlife;
- An analysis of potential consequences for conservation, renewable resources and environmental mitigation because of the industry's transition;
- A review of some of the key issues competition poses for the Bonneville Power Administration; and
- A review of the role the Council has played in regional power planning and some alternative roles it might play in a more competitive future.

COMPREHENSIVE REVIEW

In January 1996, the governors of the states of Idaho, Montana, Oregon and Washington initiated a comprehensive review of the Northwest energy system. The review's goal is to develop, through a public process, recommendations for changes in the institutional structure of the region's electric utility industry. The charge issued by the governors included designing changes to protect the region's natural resources and to distribute equitably the costs and benefits of a more competitive marketplace, while at the same time assuring the region of an adequate, efficient, economical and reliable power system. An important objective of the regional review is to involve and educate citizens of the Pacific Northwest about changes the power industry is facing and the implications of those changes. A key focus of the review is to determine how the region's federal power generation and transmission assets will be managed in the future. Other goals of the review include finding ways to continue cost-effective conservation efforts and renewable resources development in a competitive marketplace.

A Steering Committee made up of representatives from a broad range of interests is conducting the review. The work of the Steering Committee is to be completed by the end of 1996.

Members of the Steering Committee

Al Alexanderson	Portland General Electric
Rick Applegate	Trout Unlimited
Ken Canon	Industrial Customers of Northwest Utilities
Chuck Collins	Seattle, Steering Committee Chair
Jim Davis	Douglas County Public Utility District
Bill Drummond	Western Montana Generation and Transmission
Jason Eisdorfer	Citizens Utility Board of Oregon
Bob Gannon	Montana Power Company
K.C. Golden	Energy Consultant
Chuck Hedemark	Intermountain Gas Company
Sharon Nelson	Washington Utilities & Transportation Commission
John Saven	Full Requirements Group
Rachel Shimshak	Renewable Northwest Project
Brett Wilcox	Northwest Aluminum Company
Gary Zarker	Seattle City Light

Ex-Officio Members

Governors' Representatives

Todd Maddock	Idaho
John Etchart	Montana
Roy Hemmingway	Oregon
Mike Kreidler	Washington

Bonneville Power Administration

Walt Pollock	VP for Marketing, Conservation and Production
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To achieve its goal of developing regional consensus, the Steering Committee was charged with convening working groups to involve a broad range of participants and address key issues identified by the Steering Committee. Four working groups were formed and a scope of work for each group was adopted. The four working groups are: Transmission; Federal Power Marketing; Competition and Customer Choice; and Conservation, Renewables and Public Purposes. Council staff served as technical support for each working group. The Council has also provided logistical support for the Steering Committee and for the working groups by arranging for facilities for every meeting, copying and distributing all materials used at the meetings and coordinating the development of reports from consultants, as well as from each working group. Council staff also are working with the governors' representatives to ensure broad public outreach and involvement.

The working groups reported their findings to the Steering Committee on July 11, 1996. On July 12, Council staff coordinated a forum in Seattle as an opportunity to present the Review's initial findings to the public. Nearly 500 people attended the forum.

At the direction of the Steering Committee, Council staff provided analysis and background materials on specific issues and produced a "strawman proposal" incorporating draft recommendations to be used to focus further discussions by the Steering Committee and working groups. After lengthy debate, the Steering Committee called on Council staff to draft recommendations that reflect the conclusions of the Committee. The Committee reviewed and debated the staff draft on September 19, then voted to release it for public review throughout the region.

Council staff, working on behalf of the governors' representatives, have scheduled nine workshop/hearings to explain the Steering Committee proposals and take comments on them. Additional meetings are anticipated. After taking public comment, the Committee anticipates submitting its final recommendations to the four Northwest governors and to the region's Indian tribes in December.

The proposal includes:

Federal power marketing — the Bonneville Power Administration

Goals for federal power marketing are to: 1) align the benefits and risks of access to existing federal power; 2) ensure repayment of debt to the U.S. Treasury with a greater probability than currently exists; and 3) retain the long-term benefits of the federal hydropower-based system within the region.

The proposal envisions a combination of long-term (30-year) and short-term (five-year minimum) subscriptions to power from the federal system. Subscriptions would be available first to regional customers in a specified multipart priority order, starting with preference customers, then direct-service industries and utilities that participate in the residential exchange, then other regional customers and, finally, entities outside the region.

Conservation, renewable resources and low-income energy services

To sustain investments in energy conservation, renewable resources and low-income weatherization, it is proposed that utilities and state regulatory commissions voluntarily commit to dedicate 3 percent of the revenues from the sale of electricity services in the region to those purposes for ten years. Based on 1995 revenues, this amounts to approximately \$210 million per year — 57 percent of the amount spent in 1995.

The proposal recommends that two-thirds of the \$210 million be retained by local distribution utilities to carry out locally initiated, cost-effective conservation and low-income weatherization. Conservation projects implemented and funded by large consumers could be credited against the local conservation target. Local utilities also would offer or allow other electricity service providers to offer “green” power to their consumers — power from renewable energy sources. Local utilities would continue their current levels of low-income assistance until state governments pick up this responsibility. Approximately one-third of the funds would be dedicated to conservation and renewable resource development implemented through a new regional non-profit entity.

Competition and consumer choice

The proposal recommends that regulators and local utility boards and commissions be prepared to offer open access to electricity for all customers by 2001.

Utilities would separate their distribution and electricity marketing functions to ensure that consumers would have unimpeded access to alternative electricity suppliers, and vice versa, over the wires of the distribution utility. The distribution utility would continue to be a regulated monopoly responsible for reliable and safe delivery from electric service companies to consumers.

The proposal calls for active government oversight of the transition to a competitive market, including licensing of new electricity service providers, applying consumer protection laws, establishing formal complaint processes, informing consumers, and establishing local electricity providers as “providers of last resort” to ensure continued affordable service during the transition period. As well, policies should be adopted to provide utilities a fair opportunity to recover costs of previous investments that may become stranded in a competitive market, according to the report.

Transmission

The creation of an Independent Grid Operator regulated by the Federal Energy Regulatory Commission with broad membership including Bonneville and the region’s other major transmission owners is proposed. The grid operator would have clear incentives to maintain reliability and encourage efficient use of the transmission system.

Because Bonneville’s regionwide transmission facilities are particularly important to effective competition, the committee recommends that Bonneville be legally separated into two organizations — a marketing organization for the federal power system and a transmission organization. This would be accomplished without jeopardizing the security of Washington Public Power Supply System debt. Legislation will be required to accomplish these goals.

Future role for a four-state regional entity

During the transition to a competitive marketplace, there may be roles for a regional entity like the Northwest Power Planning Council. These might include 1) monitoring and evaluating reliability of the regional power system and recommending corrective actions, if necessary; 2) providing information, evaluation and analysis of the evolving marketplace to ensure full, fair and effective competition; 3) suggesting regional goals for conservation and renewable resources, tracking and reporting on progress toward those goals and recommending steps to overcome obstacles; 4) analysis of resource-related issues where the resource affects

more than one state, and coordination of multistate implementation efforts; 5) providing a mechanism for public and industry involvement in fish and wildlife decisions, and deciding how money from the power system would be spent on fish and wildlife projects; and 6) informing and involving the public on energy matters that affect them, their environment and their economy.

ENERGY CONSERVATION

An objective of the Northwest Power Act is "to achieve cost-effective energy conservation." Despite the region's success in securing efficiency improvements over the past 15 years, significant cost-effective energy savings remain. The draft power plan identifies 1,535 average megawatts of electricity savings that could be obtained over the next 20 years at an average levelized cost of 1.7 cents per kilowatt-hour.

If all the energy savings are secured, the region's consumers would save \$2.3 billion on their future electricity bills. Consumers on their own will make some of the efficiency improvements identified in the draft plan. The region's utilities have indicated they will secure more. Together, consumers and utilities in the region will probably capture about one-third of the available and cost-effective savings over the next 20 years. But unless the remaining two-thirds of the savings are secured, the draft plan suggests that the region will pay \$1.7 billion more in power system costs and natural resource impacts than it needs to.

Nonetheless, conservation acquisitions by Northwest utilities declined over the past year. Conservation acquisitions in 1996 are expected to amount to only 70 average megawatts of energy, about 60 percent of the region's 1995 acquisitions.

Market Transformation: The Northwest Energy-Efficiency Partnership

The term "market transformation" refers to a set of strategies designed to acquire efficiency improvements across a targeted portion of a market. Market transformation efforts are different than traditional utility programs, which focus on site-by-site efficiency improvements instead of widespread market changes. In most cases, it is less costly in the long run to acquire efficiency through changes in products and distribution channels than through traditional incentive-based utility programs. The Council has worked with Bonneville and the region's utilities to identify market transformation activities and develop sources of funding for the activities.

On June 17, the Council brought together representatives from the Pacific Northwest's public and private utilities, state energy offices, regulatory commissions, and both national and regional conservation organizations to plan the nation's first, regionwide, voluntarily funded partnership to promote market-level changes in the efficiency of various products. The group met again in August and agreed to form a corporation that will develop and implement a portfolio of projects. The initial agreement provides for three years of funding to be capped at \$26 million per year. Articles of incorporation are under development for the group, which has adopted the name, Northwest Energy-Efficiency Partnership. Operations are likely to begin at the end of 1996 or early 1997.

The activities under consideration for funding by the Partnership would target product manufacturers, distributors and retailers, rather than individual homeowners or small businesses. The intent is to improve the efficiency of available products and services without having to provide long-term utility incentives. Market transformation ventures could include rebates to either manufacturers or consumers to produce or purchase more efficient products, or energy-use standards to ensure that only efficient products or buildings are available.

Building Commissioning

Building commissioning is a means to ensure that commercial buildings and their equipment are working properly. Commissioning benefits many aspects of the buildings, including occupants' comfort, well-being and even productivity. It also helps ensure that efficiency improvements are realized in the operations of buildings.

The Council collaborated with Bonneville and other entities to co-sponsor the First Northwest Conference on Building Commissioning, which was held November 14, 1995, in Seattle, Washington. There were 215 participants in the conference, including building owners and managers, utility representatives, architects and engineers, contractors, consultants, and policy and research organizations. Building owners represented 43 percent of the participants. Sponsors included regional utilities, federal and state agencies and utility organizations. The Northwest Conference on Building Commissioning was designed to increase the awareness of building owners and operators in the region about the commissioning process and its benefits. The conference was followed by a half-day workshop for architects on their role in the commissioning process. The conference also included a reception where commissioning information, as well as products and services were on display. Twenty-five exhibitors participated in the reception. The Northwest Building Commissioning Collaborative has continued to meet and plans to hold a second regional conference in Portland on November 4 and 5 at the Portland Hilton Hotel. Discussions regarding further actions the collaborative might support led to an agreement to pursue development of a formal business plan that would focus on establishing a work plan for the top priority activities for regional collaboration.

Building Codes Activities

In addition to providing ongoing support to the Washington and Oregon energy code program, the Council is involved in a collaborative effort to devise a possible Idaho commercial energy code. The Idaho Department of Water Resources has convened a representative group of interested parties to begin working on the process. Two subcommittees have formed, focusing on technical and implementation issues. The group intends to have an initiative ready for the 1997 session of the Idaho legislature.

Microelectronics Manufacturing Facilities

A workshop co-sponsored by the Council and the Oregon Department of Energy was held in Portland on October 20, 1995, to explore efficiency opportunities in the new round of microelectronics manufacturing plants scheduled to be built in the region over the next several years. In Oregon alone, new microelectronics facilities are expected to add between 100 and 150 average megawatts of electricity demand over the next three years. The workshop featured internationally recognized expert Lee Eng Lock from Singapore. More than 40 people attended the workshop, including representatives from Intel, Hewlett Packard, LSI Logic, Siltec, Fujitsu and Tektronics. Representatives from six West Coast engineering design firms also participated. Portland General Electric, PacifiCorp, Bonneville, Eugene Water & Electric Board and Northwest Natural Gas sent representatives, too.

Lee presented convincing evidence and numerous case studies to support his claim that these facilities could be configured to use only half the energy they currently require.

In the second half of the workshop, participants discussed barriers that block implementation of Lee's methods and drafted a number of possible actions for the region to pursue. The most critical barrier is not technical but institutional. Because of the pace at which the industry is advancing, new facility designs are based closely on previous designs. Few companies are willing to slow their pace to re-engineer the facilities. Overcoming such institutional issues will require industry changes at the corporate level. A well-publicized, local demonstration of a resource-efficient manufacturing facility (including water conservation) would be a useful model other companies could follow.

Industry and utility representatives have shown a great deal of interest in the proceedings from the workshop, which were published by the Council. As a result of the information presented at the workshop, a follow-on scoping study of efficiency opportunities in the industry was developed with Council involvement and funded by Bonneville.

A second workshop is planned for October 14, 1996.

Regional Residential Lighting Initiative

Despite utility rebate coupons and catalog offers, regional sales of residential compact fluorescent light bulbs in the Northwest remained low in 1995. To increase the market acceptance of this efficient technology, the Council brought together regional utilities to design and implement a program aimed at manufacturers rather than retailers. The "Light Saver" program began operation in spring of 1996 and has already significantly increased sales of the bulbs across the region. Bulb prices have dropped below the \$10 mark at the retail level. In addition to serving as a catalyst for this initiative, the Council worked with the utilities and their commissions to develop an evaluation plan that would allow for appropriate cost-recovery. The utilities have agreed to fund the effort for at least another two to three years. California utilities have expressed an interest in joining and broadening the effort along the West Coast.

National Initiatives

The Council also represented the region in several national efficiency initiatives. Council staff were involved with the Consortium for Energy Efficiency (CEE) efforts for motor efficiency and compressed air systems. Staff also participated in the federal Department of Energy review of appliance efficiency standards and is commenting on several standards that are currently out for review.

Tracking Conservation Achievements

In February 1996, the Council published its second report on the region's energy savings efforts, The Green Book: Tracking Pacific Northwest Electric Conservation Achievements 1978-1994. The Green Book is based on the data compiled in Nutrak94, the Northwest Utility Conservation Tracking System, which covers Bonneville, its customer utilities and investor-owned utilities in the region. The Council also released a disk version of Nutrak94, which includes the region's conservation history and detailed program descriptions, savings and costs. The Council is now compiling the data for Nutrak95.

The Council began to develop Nutrak in 1992, at the request of the utility regulatory commissions of the four Northwest states. The commissioners have continued to work closely with the Council and the utilities in producing Nutrak reports.

Northwest utility-supported conservation efforts undertaken since the passage of the Act in 1980 resulted in about 1,000 average megawatts of cumulative energy savings. This level of annual savings is equivalent to the power output of five average-sized gas-fired combustion turbines. Utility-funded energy conserved since the passage of the Act amounts to nearly 60 billion kilowatt-hours, with a retail value to consumers of \$2.5 billion.

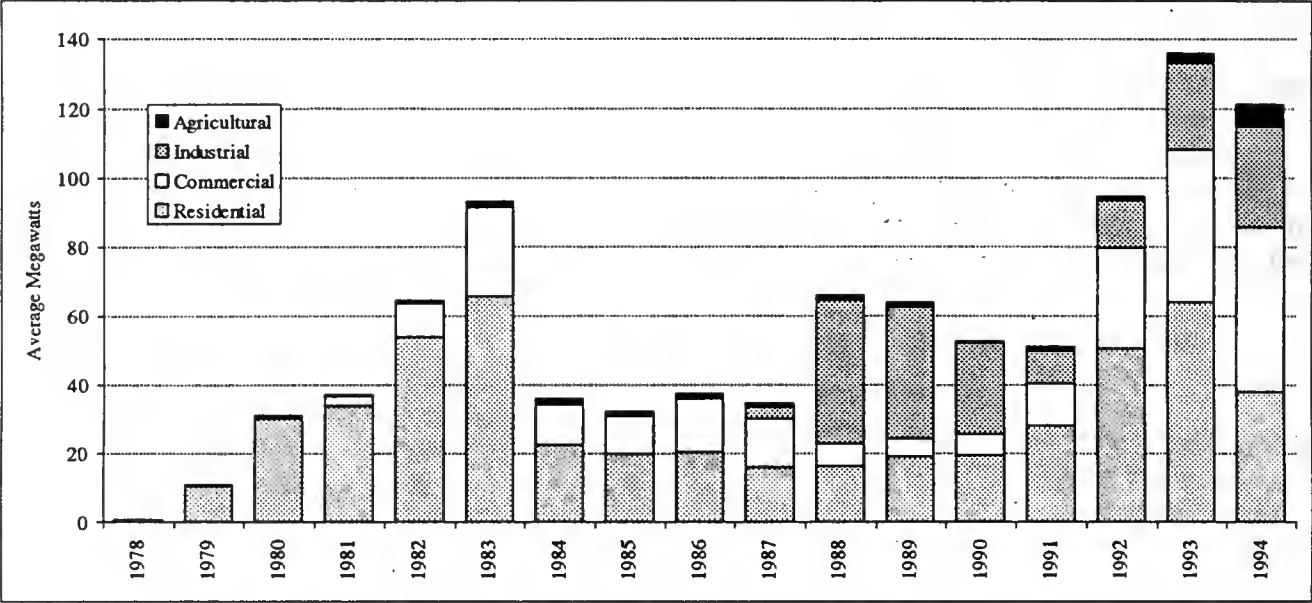
An additional 200 average megawatts are estimated to have been saved through local, state and national programs, codes and standards, for a total of 1,200 average megawatts. Figure 1 depicts the annual utility-sponsored first-year conservation savings by sector from 1978 to 1994.

To accomplish these savings, the region has weatherized more than half a million homes or apartments, replaced thousands of showerheads with efficient models, installed efficiency measures for a quarter-million irrigated farm acres, produced several hundred thousand new high-efficiency site-built homes and 65,000 high-

efficiency factory-built homes, upgraded the residential and commercial energy codes across the region, made conservation modifications to the aluminum refining plants, and developed a thriving energy-efficiency industry.

These accomplishments have required perseverance, commitment, fresh thinking and hard work. They also required an estimated outlay of more than \$2 billion. The Council has estimated that these savings were acquired at an average real levelized utility cost of about 2 to 2.5 cents per kilowatt-hour.

Figure 1
Regional Summary of First Year Conservation Savings by Sector, 1978-1994



GENERATING RESOURCE DEVELOPMENT

About 885 megawatts of new generating capacity was placed in service in the Northwest this past year. The major additions are shown below .

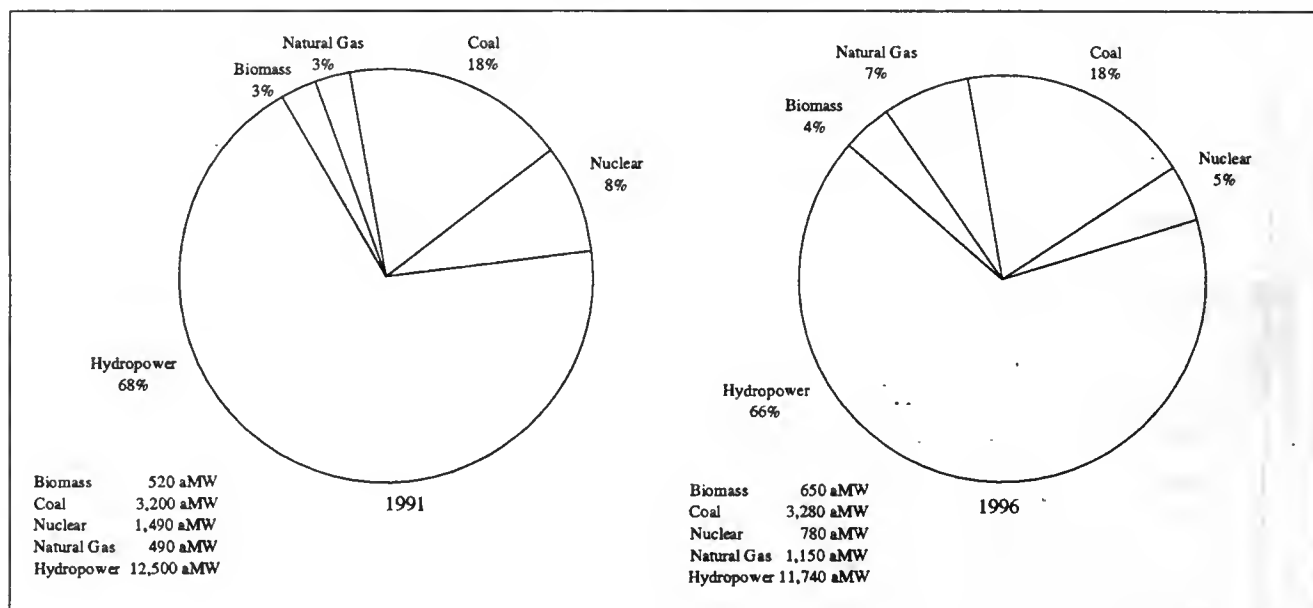
Major Northwest Generating Capacity Additions: October 1995 through September 1996

<i>Project</i>	<i>Type</i>	<i>Capacity (MW)</i>	<i>Location</i>
Coyote Springs	Natural gas combined-cycle combustion turbine	220	Boardman, OR
Hermiston Generating Project	Natural gas combined-cycle combustion turbines w/cogeneration	469	Hermiston, OR
James River (Camas)	Addition of pressure drop steam turbine cogeneration	47	Camas, WA
James River (Wauna)	Multifuel cogeneration	36	Wauna, OR
Thompson Falls	Hydropower rebuild	50	Clark Fork River, Sanders County, MT
South Fork Tolt	Addition of hydropower to existing dam	15	S. Fork Tolt River, King County, WA
Kimberly-Clark	Mixed wood residue cogeneration	43	Everett, WA

These additions confirm the popularity of large, natural gas-fired, combined-cycle, combustion-turbine power plants for bulk power generation. Low natural gas prices, reliable, efficient and environmentally clean combustion turbine technology, low capital costs, and relative ease and speed of construction all contribute to the attractiveness of this technology. Since 1991, about 70 percent of the 1,980 megawatts of new capacity constructed in the Northwest has been natural gas-fired, combined-cycle, combustion-turbine power plants.

As a result of this construction, natural gas now provides about 7 percent of electric energy dedicated to Northwest loads, up from about 3 percent in 1991 (Figure 2). Although some have expressed concern regarding the growing role of natural gas-fired generation, resource diversity in the Northwest is probably greater than in the past. Moreover, because of its low cost, electricity from new gas-fired power plants may displace the operation and thereby reduce the environmental impacts of operating older coal-fired power plants. Also, because of low capital costs, combined-cycle plants may be economically displaced during times of abundant hydroelectric energy or high gas prices.

Figure 2
Generating Resources Dedicated to Northwest Loads
(Firm Energy Basis)



Though the energy capacity brought into service in the past year consists primarily of natural gas-fired, combined-cycle power plants, the other additions reflect regional efforts to secure economical and environmentally acceptable renewable and industrial cogeneration resource opportunities. Development of these types of resources has declined due, in large part, to the more limited availability of economical and environmentally acceptable renewable resource and cogeneration opportunities.

Despite the large amount of generating capacity brought into service this past year, and despite continued regional electrical load growth, power plant construction in general continues to decline. The completions described above are the products of aggressive resource development efforts of the early 1990s. Declining natural gas prices and an increasingly active wholesale market have made the surplus of capacity on the interconnected Western system more evident, less expensive and more accessible (see below). Utilities and large industry consumers are purchasing inexpensive wholesale power produced by existing plants on the Western system rather than building or purchasing the output of new power generating facilities.

Some project construction continues. New projects and rehabilitations representing about 460 megawatts of new capacity are under construction. These include the River Road gas-fired, combined-cycle power plant, the Grand Coulee stator replacement, several small industrial cogeneration projects, and some new hydropower and hydropower upgrades.

Project permits continue to be sought by developers desiring to have plants ready for rapid development if the electricity market firms. During the past year, site certificates were issued for three proposed gas-fired, combined-cycle power plants totaling 1,770 megawatts of capacity and one 30-megawatt geothermal project. The total licensed, but unbuilt, gas-fired, combined cycle capacity in the region now exceeds 2,600 megawatts. Permits continue to be sought for additional gas-fired generation and cogeneration plants, as well as the wind and geothermal projects described below.

Renewable Resource Research and Development

One objective of the Northwest Power Act is to encourage the development of cost-effective renewable energy resources such as solar, wind, hydropower, geothermal and biomass. The Draft Fourth Northwest Power Plan identifies 1,530 to 5,500 average megawatts of renewable resources available to the Northwest, which could be developed at costs of 6.0 cents per kilowatt-hour, or less. However, because the cost of power from renewable projects is generally much greater than the cost of alternative power sources, few renewable projects appear likely to be developed in the near term. Analyses performed for the draft plan suggest that less than 50 average megawatts of energy from renewable resources will be competitive over the next decade under current economic conditions. The most promising candidates include hydropower upgrades and new and upgraded biomass-fueled cogeneration in the pulp and paper industry. Changes in the economics of resource development, such as introduction of green power marketing, mandated carbon dioxide control or renewable resource development subsidies would, of course, increase the rate of renewable resource development.

Though few renewable resources are currently economically competitive, renewable resources have continued to decline in cost and improve in performance. Moreover, the value of these resources might significantly increase if carbon dioxide production must be controlled to avert global climate change. For these reasons, the Council, in its draft plan, recommends the following actions be taken to preserve and better understand renewable resource options and to encourage the improvement of technologies for utilizing these resources:

- Ensure that the restructured electric power industry provides equitable opportunities for the development of cost-effective renewable projects.
- Ensure that the renewable resource potential of the Northwest is adequately defined and that prime renewable resources remain available for possible future development. This will require completion of key demonstration projects and resource assessment studies already under way.
- Support research and development efforts to improve renewable resource technology.
- Offer green power purchase opportunities.
- Monitor fuel prices and global climate change issues and other factors that might influence the value of renewable resources.

Important to achieving the second of these actions are the wind and geothermal demonstration and pilot projects called for in the Council's Renewable Resource Confirmation Agenda. Six of these projects are being developed:

Columbia Windfarm: The 25-megawatt Columbia Windfarm is being developed near Goldendale, Washington, by the CARES utility consortium and FloWind Corporation. The Bonneville Power Administration is funding project development and has signed a letter of agreement to secure project construction financing. The Columbia Windfarm will demonstrate the new, lightweight Advanced Wind Turbine (AWT-26) and test the performance and environmental issues of wind development in the Columbia River Gorge. Two major issues must be resolved before construction can proceed. The county conditional use permit has been appealed by the Columbia Gorge Audubon Society and the Yakama Indian Nation. Resolution of these appeals is expected this fall. Also, the Bonneville Administrator has not made a final decision to proceed, pending resolution of liability for taking of protected avian species. Expedient resolution of these issues would allow the plant to operate by late 1998.

Columbia Hills: The 31-megawatt Columbia Hills wind project, also near Goldendale, Washington, was being developed for PacifiCorp and Portland General Electric by Kenetech Windpower. This project would test the performance and environmental issues of wind development using variable speed turbines in the Columbia River Gorge. Events of the past year have clouded the future of the project. Kenetech Corporation has suspended project development activities following declaration of bankruptcy in May 1996. Moreover, the conditional use permit issued by Klickitat County is being appealed by the Columbia Gorge Audubon Society

and the Yakama Indian Nation. Kenetech is reported to be interested in selling assets associated with proposed projects.

Vansycle Ridge: The 25-megawatt Vansycle Ridge wind project in Umatilla County, Oregon, was being developed for Portland General Electric by Kenetech Windpower. This project would have tested the performance and environmental issues of wind development in the recently identified Vansycle wind resource area. Though Kenetech's bankruptcy will likely delay this project, other developers are reported to be interested in purchasing the assets of the project.

Foote Creek Rim: The 68-megawatt Foote Creek Rim wind project in Carbon County, Wyoming, was being developed for PacifiCorp by Kenetech Windpower. Output would have been sold to Bonneville, the Eugene Water and Electric Board, the Tri-State Generation and Transmission Association and Public Service of Colorado. The project would have demonstrated the performance and environmental issues of wind development in a potentially productive yet seasonally severe environment. Kenetech's bankruptcy will likely delay this project, and Public Service of Colorado has withdrawn following Kenetech's filing for bankruptcy. However, other developers are reported to be interested in the project.

Newberry: Newberry Geothermal Project is a 30-megawatt project at Newberry Volcano, Oregon, being developed for Bonneville and the Eugene Water & Electric Board by the California Energy Company. This project was intended to demonstrate the feasibility of generating electricity with the geothermal resources of Newberry Volcano and, if successful, confirm additional resources for future development. The State of Oregon site certificate has been issued and two production-scale wells have been completed. The developer, however, has notified Bonneville that the project cannot be economically developed and has requested that the contract be relocated to company leases in the Glass Mountain Known Geothermal Resource Area (KGRA) in Siskiyou County, California.

Fourmile Hill: Fourmile Hill is a 30-megawatt geothermal project at the Glass Mountain KGRA being developed for Bonneville and the Springfield Utility Board by Calpine Corporation. This project will demonstrate the feasibility of generating electricity with the geothermal resources of Glass Mountain KGRA, and, if successful, confirm additional resource for future development. The environmental assessment process is under way and anticipated to be completed in September 1997. The project could be in service by October 1999.

Negotiations regarding a geothermal project at Pueblo Valley, Oregon, were tabled by Portland General Electric because of objections rising from the proximity of the project to Borax Lake, sole habitat of the Borax Lake chub.

Hydropower Efficiency Improvements

Upgrades to existing hydropower projects can be an economical approach to increasing power productivity and reducing anadromous fish mortality. Because of the very large installed hydropower capacity in the Northwest (33,000 megawatts), upgrades offering even a fraction of a percentage point improvement in performance can have a significant aggregate effect. Estimates appearing in earlier power plans of the hydropower upgrade potential from measures such as improved turbine runners and governors suggested that at least 100 average megawatts of energy might be available from widespread adoption of these measures. The Council worked to remove impediments to these measures through means such as direct funding by Bonneville of improvements to U.S. Army Corps of Engineers and Bureau of Reclamation projects.

While many opportunities for hydropower upgrades have been secured, a new generation of hydropower upgrade technologies is emerging. These include advanced, "fish-friendly," turbine designs, real-time optimization of machine dispatch and variable speed turbines. Real-time dispatch optimization, for example, could produce an additional 23 to 92 average megawatts of energy if fully implemented in the Federal Columbia River Power System. Because of the potential fish and power benefits of advanced hydropower

technologies, the Council has organized a regional hydropower efficiency workgroup to explore the potential for cooperative research and development and information exchange.

WEST COAST ELECTRICITY MARKET

As noted above, the Northwest's resource development and power marketing have changed dramatically in response to the availability of a large amount of low-cost gas-fired and hydroelectric energy in the West Coast market. When the New York Mercantile Exchange opened trading in electricity futures on March 29, 1996, the most active trading occurred at the two Western sites: the California/Oregon border (known as COB) and at Palo Verde, Arizona. The Council estimates that about 3,000 average megawatts of electricity could be purchased from the West Coast market at considerable savings to the region (approximately \$3.2 billion) compared to the cost of building new resources to meet expanding needs. The 3,000-megawatt figure is an average. Actual purchases will fluctuate broadly due in large part to seasonal variations in loads and nonfirm power production. However, coastwide power blackouts this summer due to outages in the intertie transmission systems have underlined concerns raised in the Council's draft power plan about potential constraints on this market and reliability issues.

DEVELOPING TOOLS FOR ANALYSIS

The Council is participating in a demonstration of new approaches to simulating power production from uncertain river operations. The Stochastic Dual-Dynamic Programming approach should enable the region to improve its understanding of river operations and the impact such operations will have on power production and other uses of the river. The demonstration project was completed this summer and Bonneville is funding efforts to develop a production version of the model.

FISCAL YEARS 1996, 1997 AND 1998 BUDGETS

The Council is funded out of electricity revenues collected by the Bonneville Power Administration, a federal agency that markets power produced in the Pacific Northwest.

The Council's budget has remained relatively stable over the past seven years. In developing the Fiscal Year 1997 revised and Fiscal Year 1998 budgets, the Council continued to respond to the financial difficulties Bonneville is facing. The 1996 budget totaled \$8,033,000. This was lower than the Council's budget for 1992. In fact, since 1992, the Council has returned to Bonneville nearly \$1.7 million in savings. Budget reductions were achieved by deferring contracts, restricting travel, abolishing or freezing vacant positions, freezing salaries and by holding total staff compensation at or near Fiscal Year 1993 levels. In addition, the number of Council employees, which reached a high of 47 in Fiscal Year 1992, is projected to be 41 in the Fiscal Year 1997 budget — a reduction of approximately 13 percent. Administrative expenses have been reduced to help absorb projected annual inflation.

The revised Fiscal Year 1997 budget of \$7,986,000 represents a reduction of \$309,000 (3 percent) from the Fiscal Year 1997 budget adopted the previous year. The 1997 revised budget reflects absorption of 23 percent cumulative inflation since Fiscal Year 1992. The Fiscal Year 1998 budget was decreased by \$66,000 (1 percent) to \$7,920,000.

COUNCIL MEETINGS AND WORK SESSIONS

September 30, 1995, through October 1, 1996

October 10-12, 1995	Red Lion Inn (1) Yakima, Washington
October 24-26, 1995	Work session & committee meetings (1) Spokane, Washington
November 7-9, 1995	Park Plaza Hotel Helena, Montana
November 28, 1995	Committee meetings (1) Council Offices Portland, Oregon
December 12-14, 1995	Council Offices Portland, Oregon
January 9-11, 1996	Council meeting (1) Seattle, Washington
January 30-February 1, 1996	Work session Portland, Oregon
February 20-22, 1996	Council meeting Boise, Idaho
March 12-14, 1996	Work session Spokane, Washington
April 2-4, 1996	Council meeting Pendleton, Oregon
April 23-25, 1996	Work session Portland, Oregon
May 14-16, 1996	Council meeting Eastern Washington
June 4-5, 1996	Work session (3) Spokane, Washington
June 25-27, 1996	Council meeting Helena, Montana

July 16-17, 1996

Work session (1)
Portland, Oregon

August 6-7, 1996

Council meeting (1)
Astoria, Oregon

August 27-29, 1996

Work session - CANCELLED

September 17-18, 1996

Council meeting
Lewiston, Idaho (Clarkston, WA)

Portions of the above meetings were closed to the public for the following reasons as allowed under the Government in the Sunshine Act:

- (1) internal personnel
- (2) premature disclosure
- (3) civil litigation
- (4) retreat

RULEMAKINGS IN FISCAL YEAR 1996

October 1995 Adopted amendments to the resident fish and wildlife portions of the Columbia River Basin Fish and Wildlife Program.

April 1996 Opened rulemaking on Draft Fourth Northwest Conservation and Electric Power Plan

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COMMENTS ON THE DRAFT ANNUAL REPORT



Department of Energy
Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

September 4, 1996

EXECUTIVE OFFICE

Mr. John Etchart, Chairman
Northwest Power Planning Council
851 SW Sixth Avenue, Suite 1100
Portland, OR 97204

Dear Mr. Etchart:

Thank you for the opportunity to review and comment on the Northwest Power Planning Council's (Council) draft 16th Annual Report. Our technical and editorial comments were provided under separate cover.

Fiscal Year 1996 registered the beginning of the greatest challenge to the electric utility industry since the industry's inception. Efforts to restructure the industry to a deregulated competitive market have assumed equal importance with efforts to enhance and mitigate fish and wildlife and to assure an adequate, efficient, economical, and reliable power supply.

The Pacific Northwest has moved proactively to address these challenges through the Comprehensive Review of the Regional Power System. The Council's staff and the members serving as Governor's representatives have played a vital role in this process. The Council's draft annual report provides a useful overview of these transitional activities.

Fiscal Year 1996 also marks departure from tradition with release of the Council's draft Fourth Northwest Conservation and Electric Power Plan (Power Plan). In this draft the Council wisely refrains from proposing actions for the region at this time, but focuses instead on changes facing the industry. This departure from the norm serves the region well by allowing the Council to address the results of the Comprehensive Review in the final Power Plan.

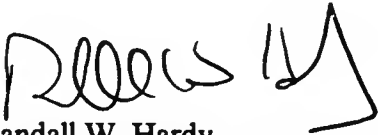
This has also been a year of change for the Council's Fish and Wildlife (F&W) Program. The Council has improved the prioritization process for funding fish and wildlife projects under the program, and future prioritizations are expected to benefit from these and ongoing efforts. The Council also recently indicated it will reopen the F&W Program adopted in December 1994. This marks the earliest review of a F&W Program following its adoption. In addition to developing a program with greater regional acceptance, this effort is likely to address significant potential changes to hydrosystem operations that may be suggested by the Independent Scientific Group in its report due within the month.

At this time, the ultimate structure of the regional power system remains uncertain. Changes are occurring more rapidly and in a broader scope than many regional players anticipated, and the recent proposed merger of Enron with Portland General Electric harkens an era of new regional interests.

The Bonneville Power Administration (BPA) has undergone a series of reorganizations and realignments to both meet the competitive market and to fulfill its legislated mandates. Additionally, BPA has been forced to terminate resource acquisition activities and to withdraw from the Tenaska Washington II project due to the combination of mandated changes to the operation of the region's Federal hydroelectric dams and the reduction in demand for power from BPA by our utility and industrial customers.

BPA supports the work of the Council to further regional solutions to the challenges facing our industry and looks forward to continued service to the Pacific Northwest. Thank you again for this opportunity to comment.

Sincerely,

A handwritten signature in black ink, appearing to read "R Hardy", with a stylized flourish at the end.

Randall W. Hardy
Administrator and Chief Executive Officer

cc:

Northwest Power Planning Council Members
Mr. Steve Crow, Executive Director, NPPC



Department of
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United States

Natural
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96-13/0002

July 30, 1996

Mr. Steve Crow
Executive Director
Northwest Power Planning Council
851 S. W. Sixth Ave., Suite 1100
Portland, Oregon 97204-1348

Topic: Comment concerning the 16th Annual Report of the Pacific NW Electric Power and Conservation Planning Council

After review of the annual report there is an apparent oversight of the significant role of Soil and Water Conservation Districts and the Natural Resources Conservation Service (NRCS) in watershed restoration activities occurring on private land. The existing partnership of conservation districts, NRCS and private landowners is a critical linkage for rebuilding fish and wildlife populations in the Columbia Basin; i.e., Bonneville Power's (BPA) Model and Focus Watersheds.

Success in improving habitat and watershed conditions is highly dependent on the cooperation of private landowners. The active support and participation of farmers and ranchers across the Northwest will be critical to any strategy that envisions more and better fish spawning and rearing habitat in the future. Conservation districts represent an opportunity to deliver the technical and financial assistance in an effective manner for achieving the goals of the Council, BPA and local communities. During the last year this message has been communicated to the Council, the Columbia Basin Fish and Wildlife Authority, Columbia River Intertribal Fish Commission, the National Marine Fisheries Service and federal and state legislators.

Conservation districts are an outgrowth of local citizens to help themselves protect the soil and water resources of the state. Districts represent true grass roots government where local citizens develop priorities and work cooperatively with government to protect and enhance the state's resource base. In Oregon, Washington, and Idaho, conservation districts are a legal subdivision of the state supported by a broad base of technical and financial support from private interests, state and local agencies, and federal agencies.

NRCS provides the bulk of the technical assistance to local landowners. NRCS staff works directly with private landowners to develop resource management plans that simultaneously protect the resources and the landowners' economic interests. Each management plan is developed cooperatively with the landowner and is tailored to meet the specific needs of the landowner and the local resources. In addition, the agency provides financial assistance to the private sector to help defray the costs associated with implementing the management plan.

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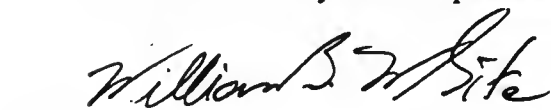
Districts have already taken the responsibility to develop the programs and deliver the technical and financial assistance needed to improve salmon habitat. They have been actively seeking funding from numerous federal, state and local governments to promote implementation of habitat protection and restoration practices. They have increased their work with private landowners, incorporating fisheries habitat practices into traditional management plans. They have developed close working relationships with watershed councils, other private groups like Trout Unlimited, and with the landowners, and developed projects jointly between the parties.

The proof of any conservation plan is the changes that actually occur on the land. The partnership has concentrated its efforts in making positive changes in how land and water are used for the protection of our natural resources. They have also been utilizing the "watershed" approach for many years. Districts have long recognized that the health of a stream is much more than just the water within the banks or the condition of the vegetation on those banks. To truly provide valuable fisheries habitat, land uses in the uplands can and often are just as important as the land uses right at the stream. Districts have used their programs to reach out to all of the landowners so that each can see how their individual decisions impact the watershed as a whole.

District programs address in-stream as well as upland considerations in protecting fisheries habitat. These programs have included protecting and increasing riparian vegetation needed for shade, assisting with rebuilding channel complexity, cropping and grazing systems, woodlot management, and irrigation practices. By looking at the watershed as a system, districts have been able to ensure not only the immediate gains in resource protection, but also have planned for the long term continuation of those gains to ensure the health of the entire system.

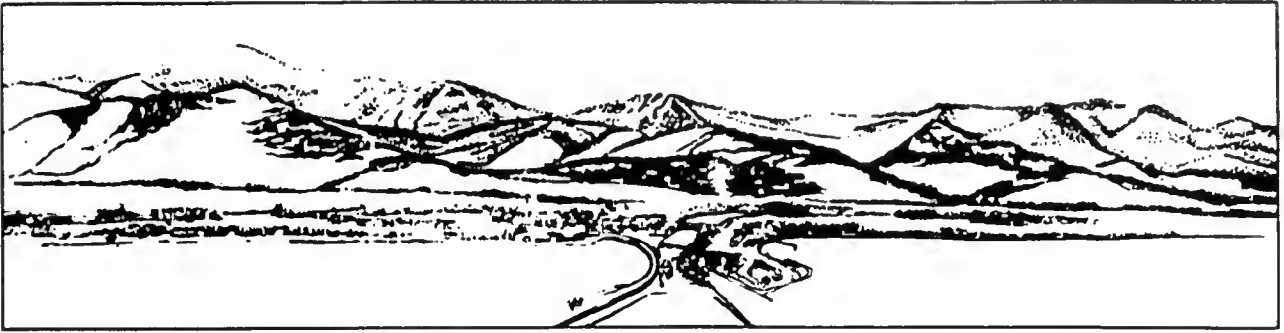
Conservation districts recognize that we have just begun the process of rebuilding our watersheds to provide for the needs of our fish and wildlife resources. The successes of the past few years need to be continued if the Pacific Northwest is going to be able to say someday that we have brought our fisheries, and especially our salmon, back from the brink. To this end, districts are actively planning continuing activities to protect and improve habitat and are actively seeking to partner with federal agencies, state agencies, local government, Tribal government, and private citizens. They are striving to deliver the package of financial and technical programs that will make the future of natural resource health and economic growth a reality.

Thank you for the opportunity to comment on the annual report. Please contact Bill White at 503-414-3085 if you have questions.


for EUGENE ANDREUCCETTI
Regional Consevationist

cc:

Bob Graham, STC, NRCS, Portland, OR
Lynn Brown, STC, NRCS, Spokane, WA
Luana Kiger, STC, NRCS, Boise, ID
Patricia Gainsforth, PFEC, Halfway, OR



CITY OF SANDPOINT • CITY HALL • SANDPOINT, IDAHO 83864 • FAX 208-263-3678

July 10, 1996

Northwest Power Planning council
851 S.W. Sixth Avenue, Suite 1100
Portland, OR 97204

Sir or Madam:

I am in receipt of the draft 16th Annual Report of the Pacific Northwest Electric Power and Conservation Planning Council.


I am disappointed that the only mention of "renewal energy projects" (page 22) indicates that there is no plan for acquiring any generating resources from solar or wind. With large areas of the inland Northwest suitable for such uses, your absence of vision to access these resources is frustrating.

As an addition to your energy conservation strategy (page 18), I would encourage the council to find a way to fund an energy audit team for each state in the region. The team, with a 20% match for travel and per diem, would be available to make ongoing recommendations to municipal governments on large scale conservation with institutions and communities. This investment for some 20 years in the town of Osage, Iowa, has saved millions of dollars with a small up-front investment.

Thank you for the opportunity to submit my comments.

Yours truly,

CITY OF SANDPOINT



David Sawyer
Mayor

cc:AIC Energy Committee
Rachel Shimshak, Renewable Northwest Project

JUL 15 1996

NATIVE FISH SOCIETY

P.O. Box 19570
Portland, Oregon 97280-0570
(503) 246-5890

July 10, 1996

Carlotta Collette
Northwest Power Planning Council
851 SW Sixth Avenue
Suite 1100
Portland, Oregon 97204

RE: Comments on the draft report to Congress, pub. 96-11

Dear Ms. Collette:

I appreciate being given the opportunity to review the draft report to Congress regarding the Council's work. It is certainly an impressive report of accomplishments that are a credit to the Council and to the region. The document contains a lot of information about process, yet it does not provide any information about the status of the salmon and steelhead runs the Council is charged with protecting.

It would be most informative if the report to Congress would include information about the fish runs in the Columbia River. I would recommend that in the report the Council review for Congress the status and trend of key native salmonids in the basin since the Northwest Power Planning Act was passed in 1980. Include which runs have been brought under federal protection through the Endangered Species Act, and which species have been petitioned for listing as endangered species. It would be informative to show how well the 76 populations of anadromous fish identified to be at risk of extinction in 1991 by the American Fisheries Society are doing today.

In terms of investments, how much of the fish and wildlife program funding has gone into hatchery production and how much into natural production and into habitat rehabilitation since the first fish and wildlife program in 1982. It was interesting to note on page 9 that "the fishery managers recommended deferral of proposals to implement the natural production section of the program," measures that have been in the program since 1994 and some since 1992. Yet, the fishery managers did not request hatchery investments be deferred. Maybe the report to Congress could explain this interesting development in the program. This is especially relevant since the whole region is being held accountable to the health of native salmonids in the Columbia and it would be informative to know what the Council is doing to

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maintain the health and abundance of native salmonids in the Columbia system.

It would also be informative for Congress to know what has happened to the sport and commercial fisheries in the river and the ocean as a result of declining native salmon runs in the river. How many commercial fishing days were there in 1995 compared to 1982 when the first fish and wildlife program was put into effect?

A few pictures would be especially informative in the report to Congress. I would recommend some line graphs or pie charts showing investments in the recovery of native fish populations compared to expenditures in hatcheries and other program features. A graph showing the numbers of spring and summer chinook returning to the Snake River since 1982 would also be informative. It would be especially helpful to see how the wild chinook are doing during this time period. Also, a graph showing how many commercial fishing days there have been each year from 1982 to the present would be useful information for Congress.

The report also provided me with new information. For example, it says on page 10 that hatchery supplementation projects "were delayed until a supplementation policy was developed under the Endangered Species Act by the National Marine Fisheries Service." I seem to have overlooked that policy and would appreciate your sending me a copy. I was not aware one existed. If it does not exist, what then does this say about the Council's actions in approving more hatchery building in the basin?

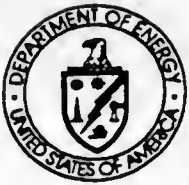
How is Congress to judge the value of the Power Planning Council's program if it is not given information about the status of the native fish populations in the Columbia since the fish and wildlife program began in 1982? This information combined with your description of the many processes the Council is involved in along with the expenditures the Council has made would present a more complete picture of the Council's program.

As an interested party, involved in the work of the Council since 1980, I am most interested in Congress having a complete picture of the Council's performance.

Sincerely,

A handwritten signature in black ink that reads "Bill M. Bakke". The signature is fluid and cursive, with a long horizontal stroke at the end.

Bill M. Bakke,
Director



Department of Energy
Bonneville Power Administration
P.O. Box 3821
Portland, Oregon 97208-3821

96-11/0003

July 30, 1996

Carlotta Collette, Publications Editor
Northwest Power Planning Council
851 SW Sixth Avenue, Suite 1100
Portland, OR 97204

Dear Carlotta:

Thank you for the opportunity to review the Council's Draft 16th Annual Report (publication number 96-11). Our review found the report to be a comprehensive summary of a lot of productive work.

Enclosed are technical and editorial changes that should be useful.

A letter from the Administrator for inclusion in the final Annual Report will be separately provided.

Sincerely,

A handwritten signature in cursive script, appearing to read "Karen", is located below the "Sincerely," text.

Karen A. Hunt
Manager for Council Liaison

Enclosure

AUG 05 1996

Staff Comments on the Council's 1996 Annual Report (publication number 96-11)

- 1. Page 3, paragraph 7: This new budget, which will average ...\$252 million plus operations that could range from \$90 to 280 million a year.**
- 2. Page 4, paragraph 5: The word "annual" should be inserted after "average" in the first sentence.**
- 3. Page 9, paragraph 3: Rather than a "transfer," it seems that the Council is actually "reallocating" funds from research to watershed projects. The fact that the \$6 million is funded by BPA doesn't seem relevant, especially since BPA funds most the the Council's projects.**
- 4. Page 18, Energy Conservation: BPA has continuing concerns about several of the underlying assumptions used for both the number of aMWs as well as the cost that the draft sites. It would be appropriate to mention effect of flywheel accruals.**
- 5. Page 23, first paragraph, last sentence: The reason for suspension of construction of Tenaska was "frustration of purpose," not low-price wholesale power.**



**Northwest
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Council**

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